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ABSTRACT

The articles in this special issue explore the connections between the dual disabilities of alcohol abuse and physical impairment, and reflect progress made in exploring the causes and treatments of alcohol abuse among the physically impaired. Selected articles include: "Results of a Model Intervention Program for Physically Impaired Persons" (Sharon Schaschl and Dennis Straw); "Alcohol Abuse and Traumatic Brain Injury" (Gregory Jones); "Alcohol Abuse and Persons Who Are Blind: Treatment Considerations" (Michael Nelipovich and Elmer Buss); "Treatment of Alcohol Abuse in Persons with Recent Spinal Cord Injuries" (Allen Heinemann et al.); "Intervention with Visually Impaired Children of Alcoholics" (Christine Saulnier); "Double Trouble: Alcohol and Other Drug Use among Orthopedically Impaired College Students" (Dennis Moore and Harvey Siegal); "Arthritic Disease and Alcohol Abuse" (David Nashel); "Epilepsy, Seizures, and Alcohol" (Michael Stoil); "Alcohol and Other Drug Abuse by the Physically Impaired: A Challenge for Rehabilitation Educators" (Bobby Greer); "Epidemiologic Bulletin No. 21: Alcohol-Related Morbidity among the Disabled: The Medicare Experience 1985" (Mary Dufour et al.); "Highlights from the 1987 National Drug and Alcoholism Treatment Unit Survey (NDATUS)" (Joan Harris and James Colliver); and "A New Agenda for Alcohol Research: The Institute of Medicine Reports on Causes and Consequences--A Summary." (JDD)

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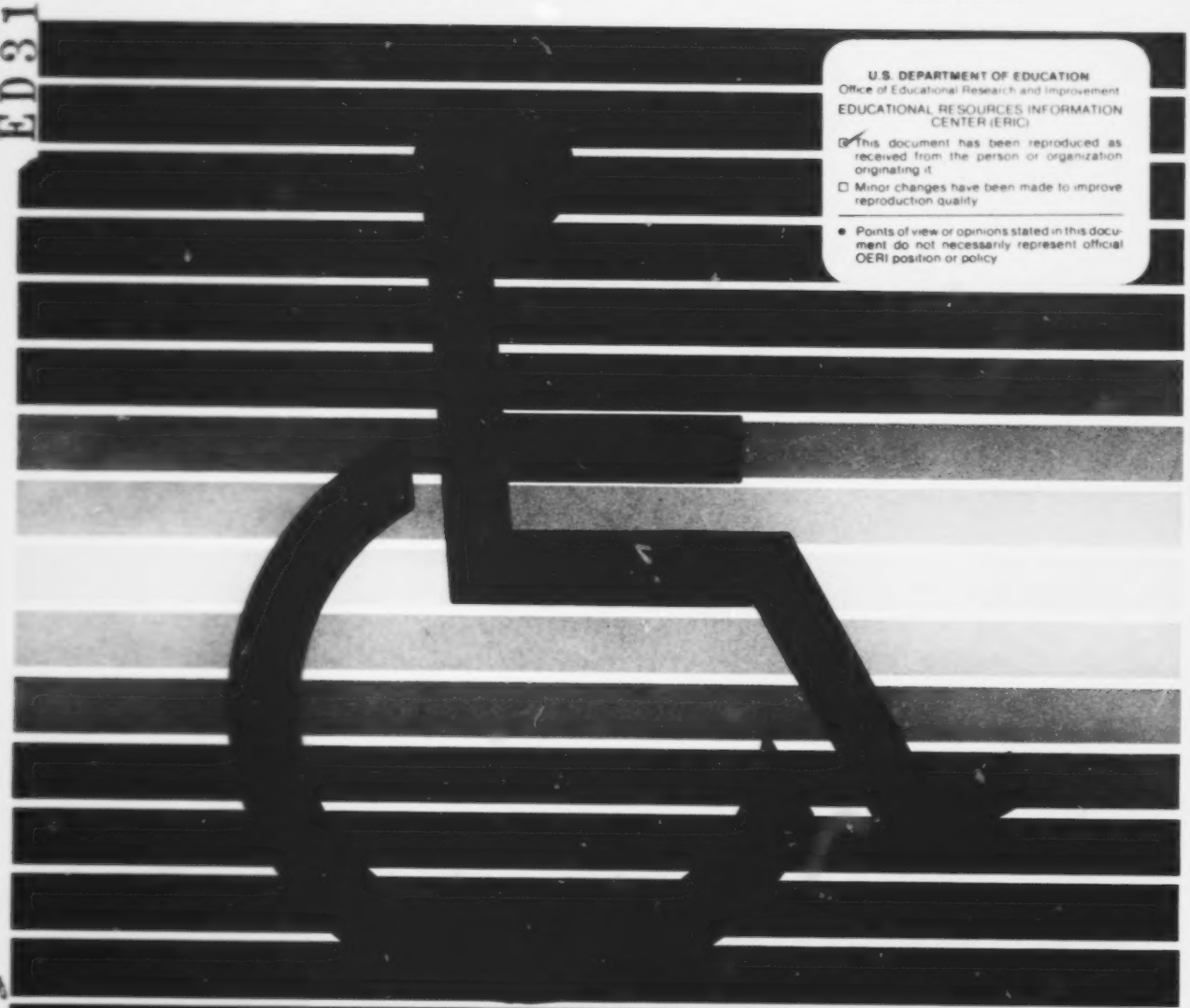

ALCOHOL AND THE PHYSICALLY IMPAIRED

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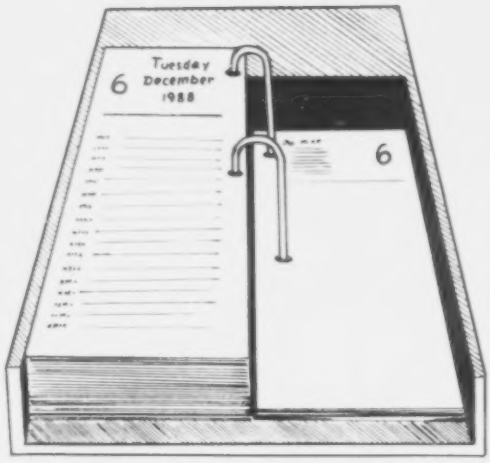

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Alcohol Health & Research World

SPECIAL FOCUS

Alcohol and the Physically Impaired

From the Editors 99

Facing the Challenge 101
ALEXANDER BOROS

Alcohol Abuse and Traumatic Brain Injury 104
GREGORY A. JONES

Treatment of Alcohol Abuse in Persons with Recent Spinal Cord Injuries 110
ALLEN W. HEINEMANN, MATTHEW DOLL, AND SIDNEY SCHNOLL

Double Trouble: Alcohol and Other Drug Use Among Orthopedically Impaired College Students 118
DENNIS MOORE AND HARVEY SIEGAL

Arthritic Disease and Alcohol Abuse 124
DAVID J. NASHEL

Alcohol Abuse and Persons Who Are Blind: Treatment Considerations 128
MICHAEL NELIPOVICH AND ELMER BUSS

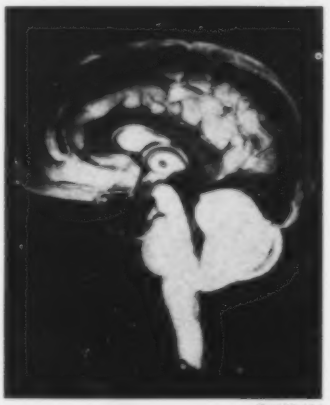
Intervention with Visually Impaired Children of Alcoholics 132
CHRISTINE SAULNIER

Epilepsy, Seizures, and Alcohol 138
MICHAEL J. STOIL

Alcohol and Other Drug Abuse by the Physically Impaired: A Challenge for Rehabilitation Educators 144
BOBBY G. GREER

Results of a Model Intervention Program for Physically Impaired Persons 150
SHARON SCHASCHL AND DENNIS STRAW

PAGE 101



PAGE 104

PAGE 118

PAGE 128

PAGE 168

PAGE 183

California Responds: Changing Treatment Systems Through Advocacy for the Disabled 154
JOHN DE MIRANDA AND LINDA CHERRY

Epidemiologic Bulletin No. 21: Alcohol-Related Morbidity Among the Disabled: The Medicare Experience 1985 158
MARY C. DUFOUR, DARRYL BERTOLUCCI, CAROL COWELL, FREDERICK S. STINSON, AND JOHN NOBLE

Readers' Exchange:

Hearing-Impaired Alcoholics—An Underserved Community 162
GLADYS A. KEARNS

Alcoholism and Bullous Changes of the Lungs 166
SIDNEY L. CRAMER

Departments:

Occupational Arena: Treating Patients with Alcohol-Related Trauma—A Report from the ARUS Symposium 168

International Perspectives: Alcohol-Related Trauma in Mexico 174

Special Populations: NIAAA Support for Studies on Hispanic-Americans 176

Research Reports:

Highlights from the 1987 National Drug and Alcoholism Treatment Unit Survey (NDATUS) 178
JOAN R. HARRIS AND JAMES D. COLLIVER

A New Agenda for Alcohol Research: The Institute of Medicine Reports on Causes and Consequences—A Summary 183

In 1980, *Alcohol Health & Research World* presented an issue that focused on persons with both physical impairments and alcohol-related problems. At that time, most research on physical impairment and alcohol abuse centered on documenting the relationship between those two conditions. Much progress has been made since then in exploring the causes and the treatments of alcohol abuse among the physically impaired.

The articles in this issue reflect this progress and explore the connections between the dual disabilities of alcohol abuse and physical impairment. Some of these connections are subtle—such as that between alcohol abuse and arthritis, as described by Nashel, and that between alcohol abuse and epilepsy, as described by Stoil. Other connections are dramatic—the finding, expressed by Moore and Siegal, Jones, and Heinemann and colleagues, that alcohol abuse often develops before physical impairment and that physical impairment is the result of accidents related to alcohol abuse, is perhaps the most dramatic. These authors state that if alcohol abuse was a problem before physical impairment, it is likely to continue to be a problem. The need to address alcohol abuse while treating the physically impaired becomes crucial to patient recovery.

At the same time, the psychological and practical problems of the physically impaired must be addressed in any number of settings if alcoholism treatment is to succeed. Treatment centers, inpatient units, and self-help groups, in meeting the special needs of the physically impaired, can be most effective in helping their alcohol-dependent clients. Examples and practical guidance to meet these needs are provided in the articles by Saulnier, Schaschl and Straw, Jones, Nelipovich and Buss, and Heinemann and colleagues.

Many of the authors in this issue believe that current levels of expertise can be expanded through increased interaction between physical rehabilitation specialists and their colleagues in the field of alcoholism and other addiction treatment. Greer, for example, suggests that this type of interaction should be part of the curriculum for training rehabilitation professionals. Saulnier describes the importance of this interaction to an inpatient program for the visually impaired, and de Miranda and Cherry describe how shared interests and activism among the two groups of professionals have resulted in a statewide effort in California.

One crucial factor remains unchanged when comparing 1980 to 1989: the enthusiasm and dedication of the individuals involved in diagnosing, treating, and preventing alcohol-related problems among the physically impaired. The editors of *Alcohol Health & Research World*, including Guest Editor Alexander Boros, were delighted with the response to the development of this issue of the journal. We hope that some of this enthusiasm is transmitted to the reader along with the research results, clinical observations, and experience-based recommendations that comprise this Special Focus issue.

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ABOUT THE COVER

The *International Symbol of Access* was adopted in 1969 at Rehabilitation International's 11th World Congress on Rehabilitation of the Disabled. It is used throughout the world and it functions on two levels: The symbol indicates to persons who are physically impaired that a building or a facility is accessible to them and, on a broader level, it is an emblematic reminder that while persons with physical impairments should be recognized as having special needs, they are involved in the same day-to-day activities as are persons without such impairments.

It is hoped that the symbol will continue to be used to increase the awareness of the general public of the problems that ideological and architectural barriers present to physically impaired persons.

The photographs in this issue of *Alcohol Health & Research World* portray physically impaired persons involved in a range of rehabilitation programs, treatments, and independent living activities. The persons depicted in these photographs are *not* involved in alcohol or other drug abuse programs.

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Facing the Challenge

ALEXANDER BOROS, PH.D.

The special winter 1980–1981 issue of *Alcohol Health & Research World* used the term "multidisabled alcoholic" to refer to an alcoholic who had the additional disability of a mental or physical impairment. That issue focused on recognizing and treating the multidisabled and announced a new disability initiative by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). The treatment and prevention specialists were expected to follow the examples cited in those pioneering articles and to continue to advance knowledge of this unique population.

The articles in this issue provide new insights into treating and understanding problems of individuals with physical impairments and alcohol- or other drug-related problems. These contributions emphasize the importance of understanding what makes this population special. The legal and psychosocial aspects of intervention among people with physical impairments pose challenges to be faced by treatment and prevention specialists.

The Rehabilitation Act of 1973, section 504 (Public Law 93–122), identifies a "handicapped" person as anyone with a physical or mental disability that limits substantially one or more of such major life

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activities as walking, seeing, hearing, speaking, working, or learning. Today, the terms "physically impaired" and "disabled" are preferred to the term "handicapped" that was employed in the 504 regulations. Physical impairments, according to section 504, may include blindness, cancer, cerebral palsy, deafness or hearing impairment, diabetes, epilepsy, heart disease, multiple sclerosis, muscular dystrophy, orthopedic impairment, perceptual impairments, and spina bifida. Mental or emotional illness and mental retardation also are described as impairments in the legislation.

An estimated 16 percent of our society is physically or mentally impaired (Bowe 1978). According to Kirshbaum (1979), clinical evidence reveals that the physically impaired have a 20-percent rate of alcohol or other drug abuse—a rate twice as high as that among able-bodied adults. Kirshbaum's estimate is supported by the findings of an article included in this issue, the Epidemiologic Bulletin No. 21.

Several authors represented in this issue have documented that a majority of physically impaired individuals with alcohol- or other drug-related problems appear to show evidence of such problems before the onset of impairment; a large percentage of these individuals became physically impaired as a result of trauma that is caused by abuse of alcohol or other drugs. A minority of physically impaired individuals develop alcohol or other drug abuse following onset of impairment. A number of stressful circumstances associated with disabilities may contribute to continuation of alcohol or other drug abuse after an individual becomes physically impaired (Boros 1983):

- The physically impaired person is handicapped in adjusting to a social and material world designed for normal persons.
- Most home-bound persons with physical impairments face boredom and a lack of challenging activities.
- In addition to normal daily stress, physically impaired persons must cope with frustrations linked to the impairment and, in some cases, with chronic pain.
- Many unemployed or underemployed persons with physical impairments lack adequate income or resources to pay for services that they require.

Barriers to Alcoholism Treatment Encountered by Persons with Physical Impairments

The following barriers to treatment for the disabled have been reported in the literature (Boros 1983):

- Programs for disabled alcoholics are few and still exploratory; no standardized model that can easily be imitated has emerged.
- Treatment activities need to be paced at a slower rate for clients who require more time for mobility and communication, including those who are blind, deaf, and intellectually impaired.
- Some treatment facilities are not accessible to persons in wheelchairs or to those who use other aids in walking.
- The prevalence of misplaced sympathies among alcoholism counselors is not conducive to the necessary confrontation of the physically impaired client's denial of alcoholism.
- Police and courts often respond inappropriately to physically impaired persons arrested for alcohol- or other drug-related offenses, sending them home rather than to treatment.
- Treatment and recovery facilities often cannot provide transportation for orthopedically impaired clients.
- Families often may be less demanding of treatment for the physically impaired family member than they would be for an able-bodied relative.
- Individuals with severe impairments frequently lack employment and therefore lack job-related incentives to seek treatment.
- The local community network of alcohol and other drug abuse service providers may be perceived as disjointed and inaccessible by persons with physical impairments, particularly when such impairments impede negotiation of bureaucratic hurdles to obtaining treatment.
- Professional literature fails to address adequately the unique treatment problems facing physically impaired alcoholics.

The above 10 generalized barriers reflect experiences of those seeking treatment services for alcoholics and other drug abusers. Such barriers vary significantly within each community.

—*Alexander Boros, Ph.D.*

- Persons with severe impairments often have easy access to addictive prescription drugs. Too often, the physically impaired person mixes prescribed drugs with alcohol, resulting in dire consequences.
- Physically impaired persons face a double stigma for the impairment and for alcohol or other drug abuse. They often sense societal rejection when deprived of jobs, recreation, and services.
- When physical impairment already has made a person feel less than complete, admitting to alcohol or other drug abuse often is another blow to self-esteem.
- Persons with physical impairment may present strong rationalizations for drinking. It is difficult to convince such individuals that sobriety offers a rewarding alternative to life's problems—escape through use of alcohol or other drugs may appear to be satisfying, at least in the short run.

These circumstances vary among individuals and types of impairment; nevertheless, their existence supports the argument that persons with physical impairment are at relatively high risk for alcohol or other drug dependence.

One of the challenges facing professionals in the addiction field is to understand why alcohol and other drug abusers with physical impairments tend to be undertreated. Some of the barriers to alcoholism treatment encountered by persons with physical impairments are identified in the accompanying sidebar and in articles included in this issue. In general, a review of the literature shows that alcohol and other drug abuse intervention programs are less accessible to those with physical impairments than they are to able-bodied persons.

Progress in the field of alcohol and other drug abuse has occurred without much attention to the unique needs of persons with physical impairments. The advent of the Alcoholics Anonymous self-help program in 1935 gave suffering alcoholics a boost in morale through peer group resources (Kurtz 1979), but not all Alcoholics Anonymous or other self-help groups effectively respond to mobility needs or communication needs of persons with physical impairments. Nearly 50 years ago, the Center of Alcohol Studies and the *Quarterly Journal of Studies on Alcohol* were organized to promote the development of a professional body of research-based knowledge on alcoholism, and in 1949, professionals interested in problems of addiction were brought together for the first time with the creation of the North American Association of Alcoholism Program (Strachan 1971). Prior to the mid-1970s, however, research literature rarely addressed the problems of alcohol or other drug abusers who had concomitant physical impairments, and professional associations in the alcohol research and treatment fields offered minimal coverage of physical impairment-related concerns at annual and regional meetings.

Slowly, the condemnation of alcoholism as a moral weakness has been replaced with the growing acceptance of alcoholism as a disease. The use of social therapies in the treatment of alcoholic patients was another breakthrough (Root 1967). Government involvement in financing and planning services for alcoholics provided needed resources to specialty populations (Hewlett 1967) and to the development of school-based prevention programs. Persons with physical impairments have not benefited fully from these gains achieved in the addiction field. With few exceptions, intensive inpatient treatment programs do not meet the needs of physically impaired clients. Furthermore, prevention curriculums for special education departments to use in educating high-risk disabled youth often receive priority for State funds earmarked for the entire physically impaired at-risk population; adults with physical impairments and alcohol-related problems rarely are targeted for special support by government agencies.

Great gains have been made in the addiction field, but people with major life-limiting impairments continue to be undertreated and undercounted. This special focus issue of *Alcohol Health & Research World* reminds us that the challenge of making treatment and prevention accessible and responsive to people with physical impairments is a challenge that faces us all. ■

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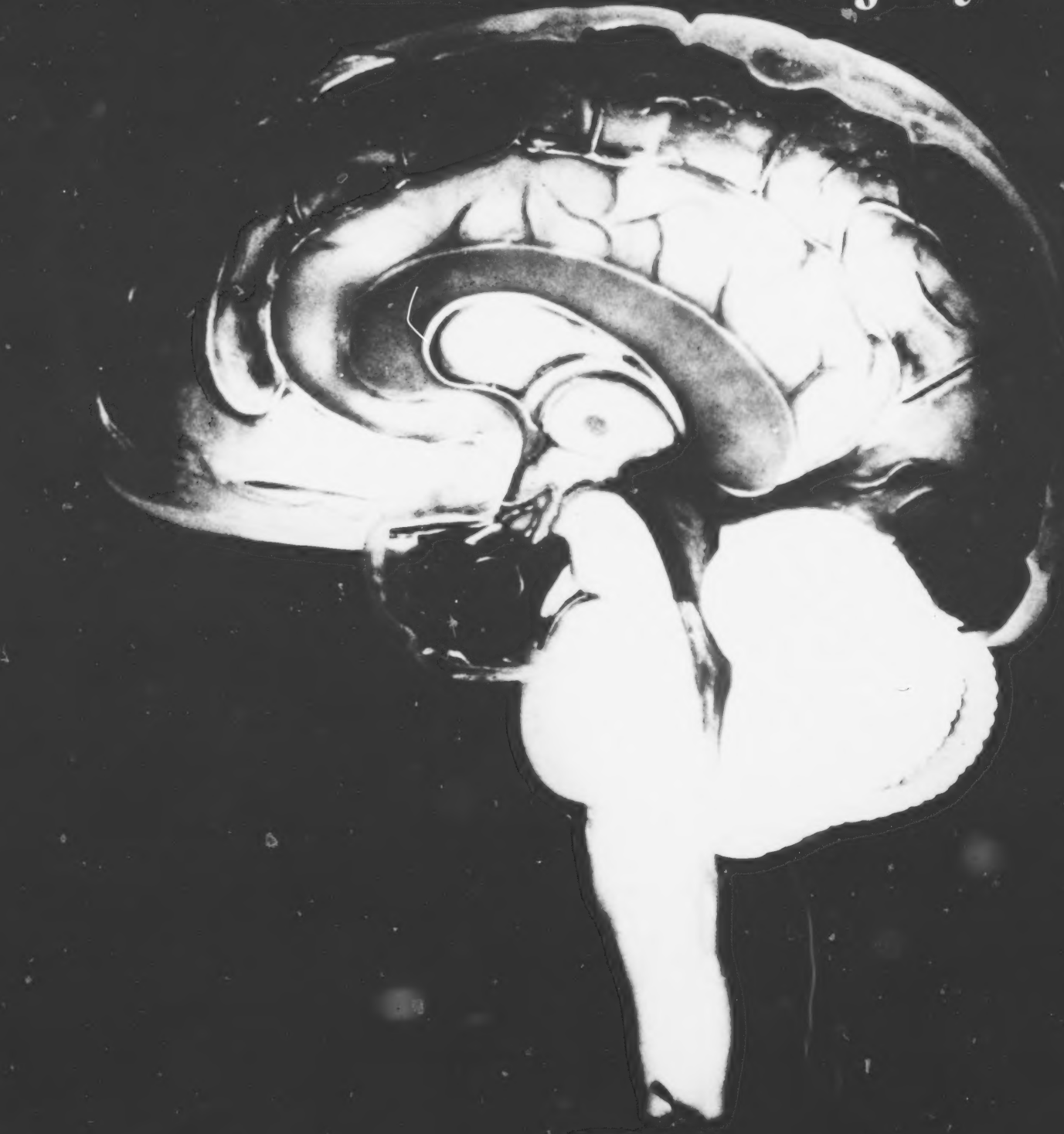
Alcohol Abuse and Traumatic Brain Injury



GREGORY A. JONES

The role of alcohol and other drug abuse in traumatic brain injury is well documented, with an incidence of intoxication at injury of approximately 50 percent. Because of cognitive, behavioral, and functional deficits, brain injury survivors pose unique challenges to the alcoholism treatment field.

HEAD INJURY AND ALCOHOL ABUSE

Alcohol consumption is a strong predisposing factor in traumatic brain injury (Kerr et al. 1971; Field 1976; Parkinson et al. 1985). In studies addressing head injury and alcohol use specifically, elevated blood alcohol levels were present in more than 40 percent of the patients seen in emergency rooms or admitted to hospitals because of traumatic head injury (Galbraith et al. 1976; Rutherford 1977; Brismar et al. 1983; Parkinson et al. 1985). In the most recent study of head-injured patients at a North American trauma center, 67 percent of those tested for blood alcohol levels showed evidence of alcohol use and more than one-half (51 percent) were intoxicated, using a definition of 100 mg/100 ml (100 mg/dl) (Sparadeo and Gill, in press). This is consistent with a Swedish study showing a 58-percent rate of intoxication among those tested (Brismar et al. 1983).

In a study of neuropsychological deficits in alcoholics, psychometric test performance was significantly lower among head-injured alcoholics than among those who had not experienced head injuries (Hillbom and Holm 1986). Both groups scored lower than the general population on most test items. Results of the study also suggest that the incidence of head injury in alcoholics is two to four times higher than in the general population.

Other studies have documented the role of alcohol and other drug abuse

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Richard Rush

in traumatic brain injury. Alterman and Tarter (1985) found the risk for head injury in patients with familial alcoholism to be almost twice that of patients without such history. In a study of 75 severely brain-injured patients (Tobis et al. 1982), 51 had histories of alcohol abuse and 29 had histories of illicit drug use. The number of patients using both alcohol and other drugs was not specified. Sparadeo and Gill (in press) found that 25 percent of their sample had alcohol histories documented in their medical records. A recent survey of brain injury rehabilitation programs around the country reported that approximately 55 percent of patients had some alcohol or other drug abuse problems before the brain injury and 40 percent had abuse problems described as moderate to severe (NHIF 1988).

Psychosocial Consequences of Head Injury

Traumatic brain injury can mean many long-term psychological and behavioral difficulties. Because every head injury is different, it is impossible to predict the exact outcome for the survivor. While generalizations can be made, it is important that treatment professionals and other concerned persons note that individuals may present few problems or a combination of several problems. Some deficits following head injury are painfully obvious; others are extremely subtle and become evident only during intensive clinical evaluation (Lezak 1978*b*). Alcohol and other drug abuse professionals working with head injury survivors commonly deal with clients who appear to function normally in most settings but who are unable to understand the concepts of alcohol or other drug addiction or to benefit from traditional treatment modalities.

To work effectively with survivors of traumatic brain injury, it is vital that alcohol and other drug abuse professionals acquaint themselves with the unique problems these clients present. The following discussion of the more common consequences of head injury is drawn from general knowledge in the field of brain injury rehabilitation. For more detailed information, the reader is directed to Levin and colleagues (1982), Edelstein and Couture (1984), Lezak (1978*a*, 1978*b*, 1983), and Brooks (1984).

Many brain injury survivors . . . are more easily distracted by extraneous stimuli and have a reduced ability to concentrate and focus.

Impairment of memory—Posttraumatic amnesia is one of the most common consequences of head injury. For many survivors, memory for events and conditions prior to their injury is generally intact while short-term memory for recent events is disrupted. In practical terms, this means that brain injury survivors might remember the events of their high school prom in great detail but forget what was served for breakfast this morning. Some survivors may try to fill in the gaps with confabulation, a usually sincere attempt to mask memory deficits that is sometimes misinterpreted as dishonesty. Impairment of recent memory makes it difficult for many survivors to retain information and generalize new learning from one setting to another.

Decreased self-awareness and insight—Many survivors of traumatic brain injury experience a reduced capacity for insight, self-monitoring, and awareness. They may have difficulty seeing the relationship between their behavior and the resulting consequences and may experience confusion or frustration in their attempt to understand situations.

Impairment of abstract reasoning—The ability to integrate information and to reason in the abstract are vital skills in our "information age." Unfortunately, many brain injury survivors experience a reduction in these skills and a corresponding increase in concrete thought. In assessment, these problems are sometimes detected in proverb interpretation tasks, where clients may be unable to move beyond the concrete content of a simple saying to its more abstract meaning (Lezak 1983).

Deficits of attention and concentration—Many brain injury survivors have difficulty attending to complex tasks. They are more easily distracted by extraneous stimuli and have a reduced ability to concentrate and focus.

Inappropriate social behavior—Problems with impulsiveness and disinhibition are common among survivors of traumatic brain injury. They may giggle or make inappropriate comments; they may interact in a rude or aggressive manner. Excessive flirting or more overt sexual gestures are sometimes observed. Some survivors become withdrawn and isolated; others demonstrate behavior that is self-centered and perceived as immature. They may have a low tolerance for stress and be easily frustrated.

Changes in mood and affect—Some brain injury survivors experience changes in emotional responses. Affect may become flat or blunted with little expression of either joy or sadness. Emotions may become labile, with broad swings of mood. Anger, along with feelings of profound grief, may be accompanied by a clinical depression.

Language and communication deficits—Damage to the brain may

result in oral-motor problems, such as slurring of speech and difficulty forming words (dysarthria). Of a more serious nature are deficits of comprehension or language disorders known as aphasia. The brain injury survivor may not understand everything heard and may not be able to find the words or formulate the sentences necessary to respond. These problems may result in increased frustration or confusion for survivors and concerned persons alike.

Sensory deficits—There is a high incidence of visual-perceptual problems following head injury; reading and writing abilities may be impaired. Tinnitus (ringing in the ears) or other disorders may affect hearing.

Goal-formulation and problem-solving difficulties—Unrealistic or undefined goals are common among brain injury survivors. When they do have clear and reasonable objectives, many survivors have a reduced ability to solve problems and to achieve their goals without sufficient structure and support.

Vocational/educational problems—Because of the permanence of brain damage and the long-term nature of its consequences, few head injury survivors are able to return to their premorbid (preinjury) level of vocational or educational placement. Those who have survived mild injuries often retain the cognitive skills necessary to return to work but may experience reduced tolerance for stress and increased fatigue.

Impact on the family and community—The functional impairments from traumatic brain injury, though serious, do not usually require that survivors be institutionalized. In their study of severely brain-injured patients, Tobis and colleagues (1982) reported that 72 percent had been discharged to return home; the rate of community discharge is even higher among survivors of moderate and mild injuries. As a result, families and communities must face the issue of the reintegration of survivors who may have experienced profound changes in their abilities and personalities.

There is a high incidence of divorce following head injury. Reports of depression and somatic disorders among spouses or children of survivors are common. Many survivors experience social isolation and marginalization as a result of their injuries; peer relationships and support systems are often radically altered.

Alcohol and Other Drug Abuse Following Head Injury

When the complex variable of alcohol or other drug abuse is considered within the context of the social reintegration of brain injury survivors, the potential for serious problems seems clear. Given that the population as a whole has a high rate of documented alcohol abuse prior to injury (and that alcohol abuse is a key factor in the etiology of brain injury), it is reasonable to suggest that alcohol consumption following injury would also be a problem. This is especially so, considering that the great majority of brain injury survivors are discharged into the community, where alcohol and other drugs are readily accessible. Reilly and colleagues (1986) have identified four factors that increase the risk of alcohol abuse after traumatic injury: 1) increased discretionary time and boredom, 2) increased enabling from family and friends, 3) uncertainty over the ability to return to work or to function effectively at work, and 4) physical limitations and posttraumatic mood change. All of these factors can be found among most brain injury survivors.

Psychosocial and functional consequences of brain injury complicate the already difficult tasks of evaluation and treatment.

While anecdotal reports are numerous, there are few data on the incidence of alcohol and other drug abuse after brain injury. In one of the first attempts to document postinjury use patterns, Sparadeo and Gill (1988) found that 54 percent of the survivors they surveyed had returned to alcohol use after completion of rehabilitation. This was in spite of the fact that the majority had been injured in motor vehicle accidents while under the influence of alcohol or other drugs. The two major factors influencing abstinence in the remaining 46 percent were the presence of a seizure disorder or placement in long-term, supervised living situations.

Clinical Considerations for Alcohol and Other Drug Abuse Professionals

Brain injury survivors present unique problems for counselors and other professionals because the psychosocial and functional consequences of brain injury complicate the already difficult tasks of evaluation and treatment. Given what is known about traumatic brain injury and alcohol abuse, it is likely that most professionals will occasionally encounter brain injury survivors; those practicing in urban areas or among minority populations should give special attention to the incidence and consequences of brain injury. Cognitive and neurobehavioral problems may have an impact on the following areas of practice:

Assessment and diagnosis—Memory deficits tend to make brain injury survivors poor historians, and subjective reports of alcohol or other drug use patterns may be inaccurate. Im-

paired insight may keep survivors from recognizing that their use patterns are problematic. Because many mild head injuries go unreported (Hillbom and Holm 1986), it is recommended that evaluators inquire about previous accidents or injuries. A simple question such as "Have you ever been knocked unconscious?" may be helpful in a preliminary screening for possible head injury status.

Because brain injury survivors sometimes have difficulty with abstract thought and more complex concepts, long or complicated assessment tools may be ineffective. Consideration should be given to the use of a brief diagnostic tool such as the CAGE Questionnaire (Ewing 1984). Utilization of data from neuropsychological or rehabilitation evaluations is also suggested.

Changes in functional abilities are often the most reliable and measurable symptoms of alcohol or other drug abuse by head injury survivors. Once the practitioner has determined that such changes are not the result of other medical conditions and can be associated with known incidents of consumption, decreasing skills or increasing patterns of maladaptive behavior may provide observable diagnostic criteria for alcohol abuse. For the survivor, these declines in functional ability can be devastating, limiting involvement in rehabilitation or vocational programming. Threatening to discontinue essential services may motivate the brain injury survivor to respond to intervention.

Intervention and treatment—Insight-oriented approaches are prevalent among treatment models for alcohol and other drug abuse (Logan et al. 1987). However, the usefulness of psychodynamic approaches with brain injury survivors is questionable because of the high incidence of cognitive deficits, such as impaired abstract reasoning and decreased insight. Behavioral difficulties of survivors, such as impulsiveness and disinhibition, may cause conflict or tension in group sessions, reducing the effectiveness of the sessions. Rather than receiving support and affirmation from group members, brain injury survivors may be stigmatized or characterized as disruptive. These problems also may be experienced in meetings of self-help groups, such as Alcoholics Anonymous, where significant neurobehavioral problems attributable to head injury may be viewed as "character defects."

Effective case management usually requires an interdisciplinary approach.

In the case of brain injury rehabilitation, the prevailing behavioral model of intervention relies on achieving positive long-term outcomes through a series of short-term goals (Goldstein and Ruthven 1983; Wood 1987). This approach may be more effective with inpatients than with alcohol- or other drug-abusing outpatients who live in community settings where factors influencing behavior cannot be as easily monitored.

In a manual examining methods of counseling head injury survivors in the community, Blanchard (1984) emphasizes the need for practitioners to understand the cognitive and behavioral consequences of head injury and to rely more on such basic counseling techniques as respect, authenticity, and empathy.

Case management—Agencies and individual practitioners serving brain injury survivors who abuse alcohol or other drugs are responsible for addressing their often complex needs and either providing necessary services or making appropriate referrals. Effective case management usually requires an interdisciplinary approach involving social workers, psychologists, occupational and physical therapists, vocational counselors, and specialists in community reentry. Professionals must acquaint themselves with available programs, since referrals to economic or housing assistance programs and consultation with medical or public health professionals may be necessary. Services for spouses or families of clients also should be considered, because the dual problems of disability and alcohol or other drug abuse put intense pressure on family systems.

Future Directions

The outlook for future development in the area of alcohol or other drug abuse and brain injury is mixed but hopeful. There remains a troubling avoidance of the problem on the part of clinicians who provide acute care to brain-injured persons. In a recent and quite revealing survey of 154 trauma centers in 43 States, only 55.2 percent regularly measured blood alcohol levels upon admission (Soderstrom and Cowley 1987). In a retrospective chart review of 379 trauma patients seen in the emergency room of an urban teaching hospital, Chang and Astrachan (1987) found that although 43 patients were suspected or known to have used alcohol or other drugs, none was referred for further evaluation.

Rehabilitation providers, on the other hand, have responded to the problem of alcohol abuse and brain injury with a positive initiative. In 1987, the Professional Council of the National Head Injury Foundation convened a Substance Abuse Task Force. The work of this group, though preliminary, has helped to define the problem from both an etiological and clinical perspective and to suggest potential solutions. A posi-

tive finding of the task force is that 50 percent of acute and 83 percent of the postacute rehabilitation programs surveyed are addressing alcohol and other drug abuse within their range of services (NHIF 1988).

Better identification and intervention strategies for those with traumatic brain injury will succeed only if a corresponding initiative is undertaken within the alcohol and other drug abuse treatment field. Recommendations for development of effective services for brain injury survivors include improvement in the following areas:

Research—The number of brain injury survivors being served within the current alcohol and other drug abuse treatment system is not documented. To determine the effectiveness of current programs and methods, it is essential that this population be profiled. While it may be reasonable to suppose that brain-injured persons who abuse alcohol or other drugs have a high incidence of discharge from treatment centers for failure to meet treatment goals and are more prone to relapse than those without brain injuries, this has not been established.

Education—Perhaps the greatest barrier to the effective identification and treatment of brain injury survivors with alcohol or other drug abuse problems is the continued lack of awareness among professionals. Medical and rehabilitation professionals would benefit from additional training in assessing alcohol and other drug abuse. Professionals treating clients who abuse alcohol and other drugs need more information about brain injury and its consequences. Alcohol and other drug abuse counselors should be encouraged to familiarize themselves with the brain injury rehabilitation programs and services in their communities.

Interdisciplinary dialogue and cooperation—Communication between the rehabilitation and alcohol and other drug abuse fields merits further development, especially where brain injury is concerned. Professionals in both fields have much to learn from each other.

Preliminary attempts to examine and integrate information from various fields have contributed much to the effort. With additional research, education, and improved interdisciplinary cooperation, the outlook is hopeful.■

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Treatment of Alcohol Abuse in Persons with Recent Spinal Cord Injuries

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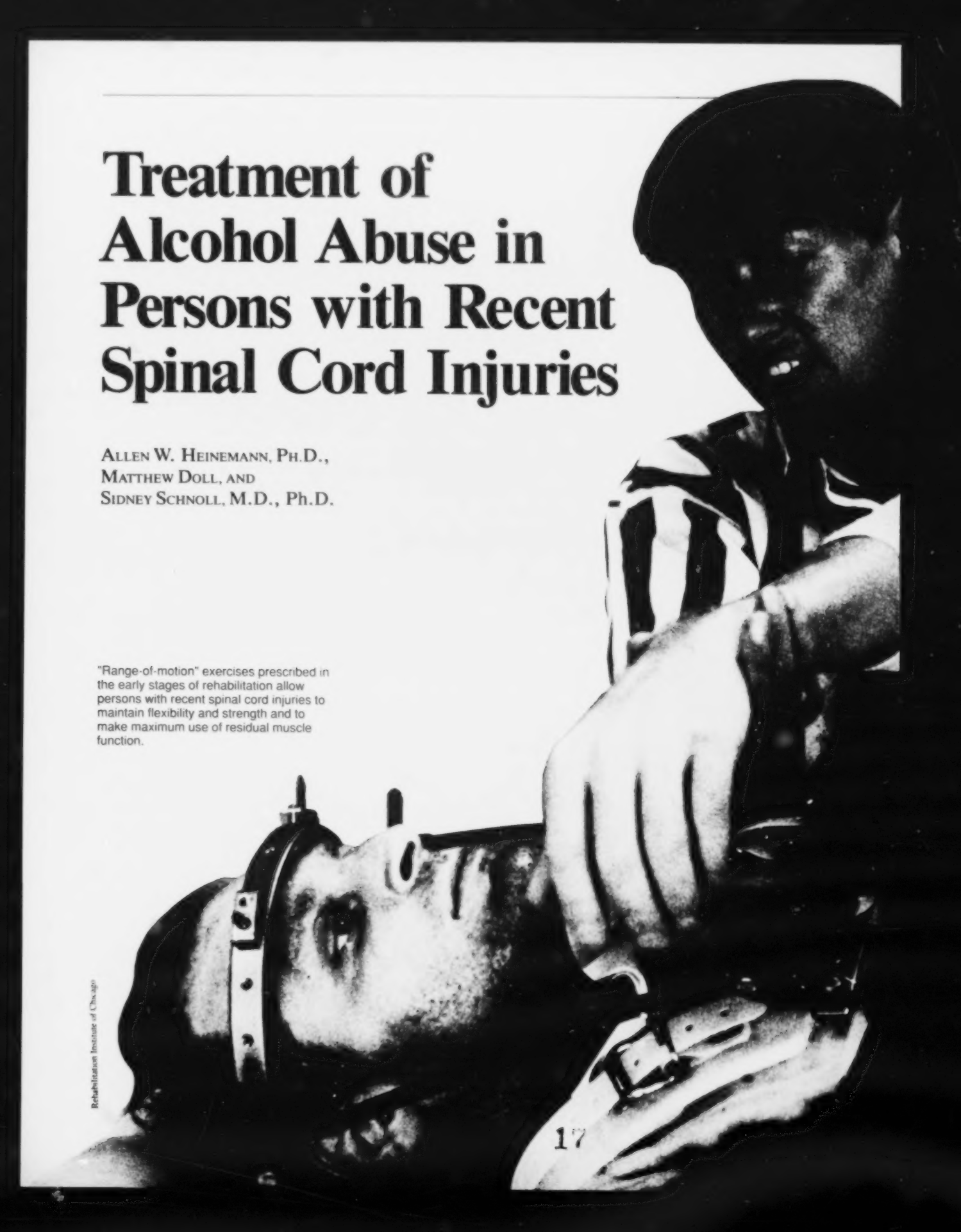

"Range-of-motion" exercises prescribed in the early stages of rehabilitation allow persons with recent spinal cord injuries to maintain flexibility and strength and to make maximum use of residual muscle function.

Rehabilitation Institute of Chicago

The prevalence of alcohol-related problems in persons with physical disabilities has emerged as an issue in medicine and physical rehabilitation. Physicians, rehabilitation specialists, and service providers increasingly are aware that alcohol abuse not only can contribute to onset of disability, but also can undermine the rehabilitation process by impairing the learning process and increasing morbidity.

In patients whose disabilities are the result of traumatic injury, these effects may be exacerbated. In one study, O'Donnell and colleagues (1981–1982) reported a 68-percent rate of alcohol or other drug use at the time of a disabling spinal cord injury (SCI) among 54 patients on a spinal cord injury unit; 68 percent of patients also resumed drinking during hospitalization. Other researchers have found that the rate of intoxication varies between 17 and 49 percent for persons who incur traumatic injury (Galbraith et al. 1976; Fullerton et al. 1981; Gale et al. 1983; Frisbie and Tun 1984; Heinemann et al. in press). Impaired judgment resulting from intoxication appears to have been responsible for increased risk-taking—the cause of many of these injuries.

The prevalence of alcohol use and abuse following initial care for traumatic disability also has been reported in several recent studies. In a 1985 study of vocational rehabilitation and independent living center clients with SCI, the rate of moderate and heavy drinking reported was 46 percent, nearly twice the rate reported in the general population (Johnson 1985). The rate of

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alcoholic symptomatology has been observed to vary from 49 percent of persons with recent onset SCI (Heinemann et al. 1988*a*) to 62 percent of vocational rehabilitation facility clients (Rasmussen and DeBoer 1980–1981).

Although there are reports on the nature and extent of alcohol abuse among traumatic injury patients, less information is available about traumatic injury patients who recognize and seek treatment for alcohol-related problems. Knowledge of the factors leading to recognition and treatment for these patients should enable rehabilitation professionals to assist other patients in need of similar services. If, as Marlatt and colleagues (1988) suggest, personal injury contributes to a drinker's awareness of an alcohol-related problem, then the period following injury may be a particularly productive point at which to intervene.

In fact, failure to intervene can threaten the entire rehabilitative process. Unrecognized alcohol abuse may contribute to neglect of self-care and, consequently, to increased morbidity. Psychological and social adjustments—formidable enough already for persons who incur traumatic injury—may be complicated further by alcohol abuse. Continuation or resumption of drinking following personal injury also may interfere with productive physical activity by a rehabilitation client (Heinemann et al., in press). For these and other reasons, it is critical that rehabilitation professionals understand and, where necessary, facilitate the identification and treatment of alcohol abusing clients.

The Rehabilitation Institute of Chicago Study

The need to improve understanding of the behaviors associated with the perceived need for alcoholism treatment among persons who incur traumatic injury resulted in NIAAA-supported research at the Rehabilitation Institute of Chicago, a 176-bed, nonprofit hospital in the Midwest Regional Spinal Cord Injury Care System. The goal of the study was to describe the extent to which persons who had incurred traumatic injuries experienced alcohol-related problems, recognized they had problems, and then acted to reduce abusive drinking. The objectives of the study were to assess the rate of alcohol use, problems resulting from drinking, perceived need for treatment, and actual receipt of treatment for alcohol abuse from 6 months prior to 18 months after spinal cord injury.

A total of 168 patients admitted consecutively met inclusion criteria for this study. Patients in the sample were between 13 and 65 years of age, cognitively intact, injured during the past 12 months, and English speaking. Of the 154 patients for whom physician permission to participate was obtained (90 percent of eligible patients), 103 agreed to participate. The participant and nonparticipant groups did not differ in age, gender, race, injury etiology, self-reported intoxication at injury onset, marital or social status, diagnosis, or exposure to substances for which routine toxicology screening was completed (Heinemann et al. 1988*b*).

Because approximately 1 month is needed for patients to adjust to a rehabilitation hospital environment and to consider favorably a request to participate in a research project, patients were not approached about this study until between 4 and 6 weeks after admission. Patients were told at the initial approach that the security of their data would be safeguarded by a confidentiality certificate and that they were being asked to participate in three interviews for which they would be paid $20 each. The first interview, conducted during inpatient rehabilitation, reviewed drinking patterns during the 6 months prior to injury. The second interview was conducted 6 months after SCI, and the third interview occurred 18 months after SCI. Interviews typically lasted 3 hours.

Of the 103 participants, 75 continued through the third assessment. They ranged in age from 16 to 63 years, with an average age of 28.2 years. Men comprised 75 percent of the sample. Most of the participants were white (75 percent); the others were black (15 percent), Hispanic (9 percent), and Asian (1 percent). The marital status of participants included those never married (63 percent), married (26 percent), divorced (8 percent), and separated (4 percent). Education attained included less than high school graduation (28 percent), high school graduation or equivalent (59 percent), college graduation (7 percent), and graduate degree completion (7 percent). The most frequent cause of injury was a road or traffic accident (41 percent), and quadriplegia was the resulting disability for 64 percent of the sample.

The Type A Drinker as the Modal Alcoholic SCI Patient

A typology devised by Glass (1980–1981) highlights the potential differences between persons with physical disabilities whose drinking problems predate injury (Type A drinkers) and those whose drinking problems began after injury (Type B drinkers). Glass asserted that Type B drinkers were more likely than Type A drinkers to have favorable rehabilitation outcomes.

Applying Glass' typology to the Chicago sample, 65 percent of the sample were classified as Type A drinkers, with onset of drinking problems before injury. Six percent

were Type B drinkers, with onset of drinking problems after injury. The remainder (29 percent) reported no drinking problems during any time period. Drinker type was strongly related to self-reported intoxication at injury onset.

As expected, pre-injury drinking patterns were strongly related to intoxication at injury. While the overall rate of intoxication was 43 percent, 27 of the 49 Type A drinkers (55 percent), 1 of the 4 Type B drinkers (25 percent), and 3 of the 20 nonproblem drinkers (15 percent) reported intoxication at injury onset. Type A drinkers also reported drinking and experiencing alcohol-related problems at more assessment periods than did Type B and nonproblem drinkers. For example, 55 percent of the Type A drinkers reported drinking on three or more occasions at each of the assessment periods, whereas only 25 percent of the Type B drinkers and 27 percent of the nonproblem drinkers reported this pattern of drinking. Although this relationship was statistically significant, the small number of Type B drinkers limits the generalizability of these results.

Relationships between demographic variables and drinker type also were examined. No relationship was found between drinker type and age, injury etiology, level of injury, race, marital status, or drinking frequency and quantity immediately after injury. Seventy-one percent of the men and 47 percent of the women were Type A drinkers who reported significantly greater drinking frequency before injury than either Type B or nonproblem drinkers. Both Type A and Type B drinkers reported greater drinking frequency during the 6- to 18-month postinjury period than did nonproblem drinkers.

No differences were found between participants who continued through to the third interview and those who dropped out of the study in terms of age, sex, race, marital status, injury etiology, quantity and frequency of drinking before injury, number of alcohol-related problems, perceived need for treatment, or receipt of treatment before injury. However, noncontinuing participants averaged less formal education than continuing participants.

Pre-injury drinking patterns were strongly related to intoxication at injury.

Alcohol Consumption Patterns Among SCI Patients

Alcohol consumption was quantified by asking participants to report the frequency and quantity of alcohol consumed during each of three time periods: 6 months before injury, 6 months after injury, and from 7 to 18 months after injury. Quantity was coded as number of drinks per drinking occasion; frequency was coded on an 8-point scale of 0 (no drinking) to 7 (binge drinking). This measure quantifies drinking in a manner similar to several valid and reliable measures, including the Drinking Classification Indices (Brandsma et al. 1980), the Quantity-Frequency-Variability Index (Cahalan et al. 1969), and the National Alcohol Program Information System (NAPIS) ATC Client Intake Form (NIAAA 1979).

Because the reliability and validity of self-report measures used to assess drinking and resultant problems have been questioned, several methods were employed to substantiate the self-reports. Test–retest reliability of substance use information for this sample typically exceeded 0.90 and, as reported previously (Heinemann et al., in press), evidence of valid self-reports was obtained. Serum ethanol analysis conducted at patient's admission to the acute SCI unit was in agreement with self-report in 78 percent of cases. Consumption without intoxication or intoxication with some other substance, as well as invalid self-report, could account for less than perfect agreement between these measures.

The proportion of the sample that reported drinking on three or more occasions during any of the three assessment periods was 93 percent. The proportion of the sample that drank on three or more occasions during the 6 months before injury was 91 percent. That proportion dropped to 53 percent for the 6 months after injury and increased to 67 percent during the next 12-month period (see Figure 1). Median frequency of drinking for those who drank was three to six times per week before injury and one to two times per week at the second and third assessments. Median quantity of alcohol was five drinks per drinking occasion during the 6 months before injury and four drinks per drinking occasion during the two postinjury assessment periods (see Figure 2).

Overall, the proportion of drinkers declined from pre- to postinjury. However, fully two-thirds of the sample were drinking 18 months after injury. Median consumption also declined from pre- to postinjury, a finding consistent with the results of Frisbie and Tun (1984). Nonetheless, a median of four drinks one to two times each week was observed 18 months after injury.

Alcohol-Related Problems and Perceived Need for Treatment

Seventy-one percent of the sample reported one or more alcohol-related problems, and 15 percent

reported believing they needed treatment for these problems. Eleven percent reported receiving treatment.

Alcohol-related problems were assessed by asking participants in the Chicago study to report if they had experienced any of the following as a result of drinking: 1) loss of control over amount or strength of alcohol used; 2) problems with family; 3) problems with friends; 4) problems thinking, remembering, or controlling thoughts; 5) problems at work; 6) physical or health problems; 7) becoming overly tired; 8) becoming overly excited, agitated, or nervous; 9) experiencing negative moods, such as sadness, depression, helplessness, or guilt; 10) sexual problems; 11) reduced driving ability; 12) hallucinations; or 13) financial problems. Responses to each of these categories were coded as 0 (no) or 1 (yes). Positive responses were summed to form an index of alcohol-related problems similar to indexes formulated by Donovan et al. (1983) and Fillmore (1974).

Figure 3 shows the proportion of the sample reporting each of 13 assessed alcohol-related problems at each assessment period. The proportion of the sample reporting one or more problems was 65 percent during the 6 months before injury; this rate dropped to 17 percent during the 6 months after injury and rose to 24 percent during the following year. Pre-injury alcohol-related problems reported by at least one-quarter of the sample included loss of control over the amount used (32 percent), cognitive difficulties (33 percent), fatigue (35 percent), and driving problems (33 percent). Relatively few persons reported any of these specific problems after injury.

The rate of self-reported drinking problems also declined initially after injury but increased to 24 percent at the last assessment. Onset of drinking problems was reported to be most common before injury; only 6 percent reported drinking problems for the first time after injury. As might be expected, persons who acknowledged alcohol-related problems prior to injury were far more likely to report being intoxicated at injury onset than were persons with postinjury onset of alcohol-related problems or no problems.

Perceived need for treatment was assessed by asking participants, "During this time period, did you ever think that you needed help regarding use of this substance?" Similarly, receipt of treatment was assessed by asking, "During this time period, did you ever receive any counseling or treatment for your use of this substance?" Intoxication at injury onset was assessed by asking, "Were you under the influence of alcohol or any other drugs at the time of your injury?" Findings at each assessment period are shown in Figure 4.

The proportion of participants

Figure 1 **Drinking Frequency of SCI Patients Prior to Injury, 6 Months Postinjury, and 18 Months Postinjury**

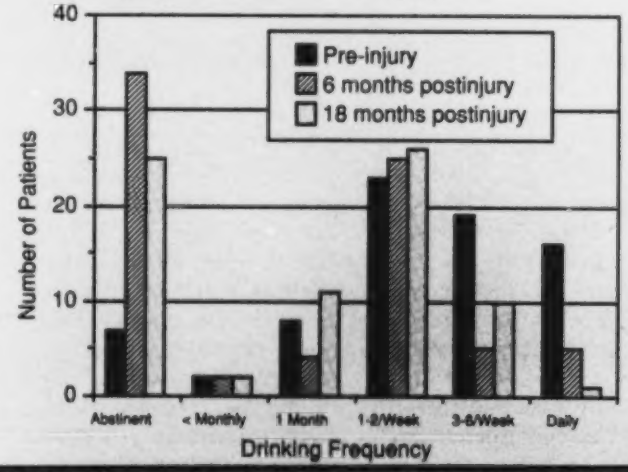


Figure 2 **Drinking Quantity of SCI Patients Prior to Injury, 6 Months Postinjury, and 18 Months Postinjury**

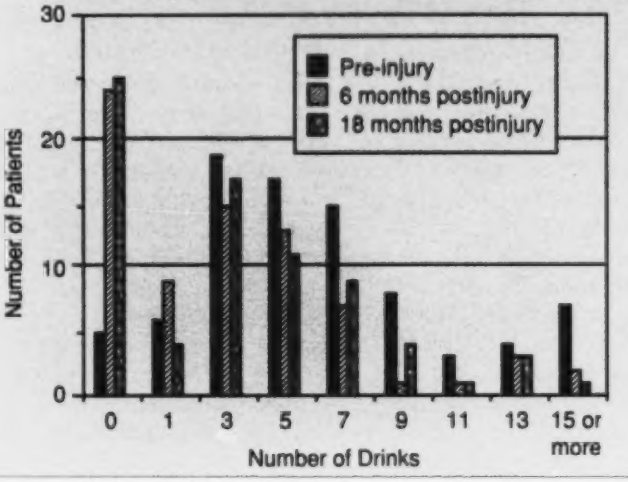


Figure 3 **Percent of SCI Patients Reporting Specific Problems at Each of Three Assessment Periods**

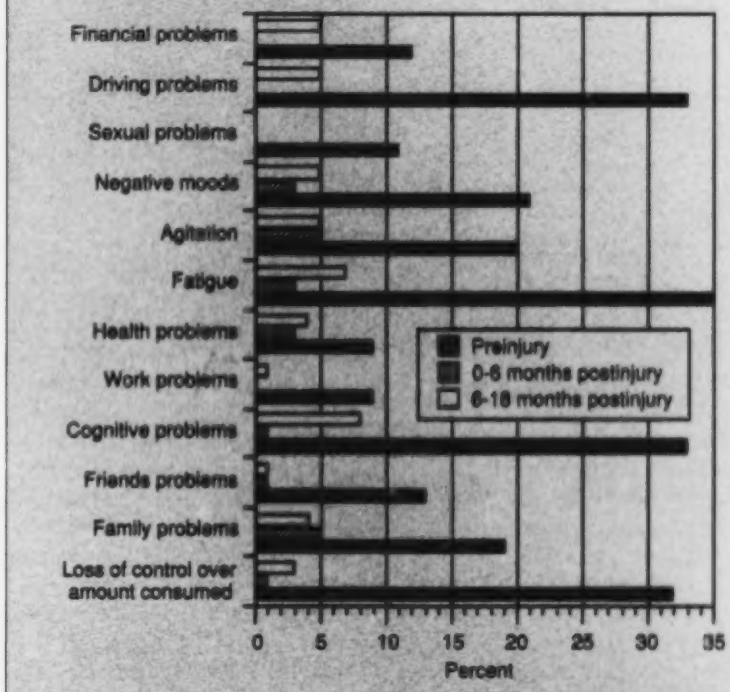
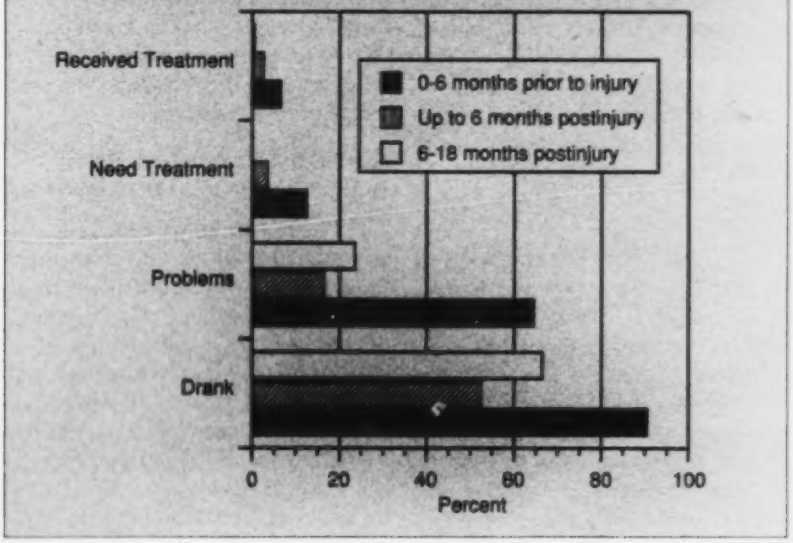


Figure 4 **SCI Patients Reporting Drinking, Drinking Problems, Need for Treatment, and Treatment at Each of Three Assessment Periods**



who believed they needed assistance for drinking-related problems declined from 13 percent during the immediate pre-injury period to 4 percent immediately after injury, to none during the following year. A similar pattern was observed for actual receipt of assistance for drinking problems: 7 percent reported receiving assistance before injury; 3 percent reported receiving assistance immediately after injury; and 1 percent reported receiving assistance during the following year.

Persons who thought they needed assistance but did not receive treatment were asked why they did not seek assistance. At the first assessment, changing one's mind was cited by six persons. Other reasons cited included inability to afford treatment (N = 1), not knowing where to obtain treatment (N = 1), believing treatment was unavailable (N = 1), and believing that one's drinking pattern was unchangeable (N = 1). No reasons were given by persons not receiving treatment at later assessment periods.

SCI Patients Receiving Treatment for Alcohol-Related Problems

Participants receiving treatment were asked the most important reason for their seeking treatment. At the first assessment, their reasons included employer referral (N = 2), referral by family (N = 1), and court-ordered referral (N = 1). At the second assessment, one person each cited physician referral and a desire to stop drinking as the reason for seeking treatment. One person at the third assessment cited a court order as the reason for referral.

The relationship between number of drinking problems and perceived need for treatment was examined at each assessment period. At the first assessment, persons who reported no need for treatment reported a mean of 2.0 problems, whereas persons reporting a need for treatment reported a mean of 5.7 problems. No significant relationship

Rehabilitation Institute of Chicago

Allen Heinemann, Ph.D., meets with project members (*left to right)* Elizabeth Rogers, Matthew Doll, and Nancy Goranson. Heinemann was awarded a grant by the National Institute on Alcohol Abuse and Alcoholism to study the prevalence of and rehabilitation outcomes associated with alcohol use following spinal cord injury.

was found at the second and third assessment periods.

Collectively, 11 percent of the sample reported receiving alcohol treatment at some time, although most of those receiving treatment did so before injury. The relatively low rate at which persons believed they needed treatment for drinking problems, despite the high prevalence of drinking and alcohol-related problems, may reflect individuals at different stages of the addictive process (see Prochaska and DiClemente 1986). Consistent with the findings of Marlatt and colleagues (1988), the fact of injury for persons who were intoxicated may have served to illustrate the extent of their drinking problems and motivated them to initiate behavior change. However, the major reason for not pursuing treatment was changing one's mind about the need for treatment. This change in belief can be understood as an aspect of denial or rationalization about the severity of alcohol-related problems.

No one in the Chicago sample who believed that treatment was needed asserted that social support or self-initiated attempts to control drinking were successful. For persons who obtained treatment, external agents (employers, courts, family, and physicians) most often were cited as a reason for pursuing treatment.

Although some drinkers did stop or reduce their drinking after traumatic injury, others did not. This finding supports the theory that the acknowledgement of drinking problems is a developmental process. As alcoholism treatment professionals contend, more than a major life disruption appears sometimes to be required to convince an alcohol abuser to seek treatment. Thus, spinal cord injury appears to do no more to cure drinking problems for some persons than do job loss, divorce, and other forms of trauma. However, SCI does appear to present an opportunity for external agents to intervene on behalf of alcohol abusers who become injured.

SCI and the Addictive Process

The results of this study help to identify stages of change in addictive processes. SCI provided an opportunity for some persons to recognize the seriousness of their problems with alcohol and to make changes in their drinking patterns. For most, this change was achieved without professional assistance. Yet others continued to drink and to drink heavily, a testament to the pernicious quality of alcohol addiction. It may be that some participants with pre-injury drinking problems were early onset drinkers whose drinking reflects a genetic component. The success of rehabilitation interventions that consider familial and personal drinking histories are apt to be greater than interventions that do not.

As with most studies, caution should be exercised in generalizing these observations to all persons with SCI. Participants were recruited from one rehabilitation hospital, albeit with a large, diverse catchment area. Whereas refusal to participate in the study did not appear to bias the results, the tendency of persons with less formal education to cease participation in the study may signal that individuals who completed more years of formal education (and who most likely enjoyed higher socioeconomic status and stronger social supports) were those assessed at the third interview. Replication of these observations will be important to generalize these results with confidence to other populations.

Future studies should investigate the extent to which early postinjury drinking patterns continue over time. The ways in which drinking is related to morbidity, vocational outcome, and independent living also require examination.

The Need for Alcohol Intervention In Rehabilitative Care

Several observations for enhancing the rehabilitation care of persons with recent SCI emerged as a result of the study. First, assessment of alcohol use and alcoholism should be a routine part of all inpatient screenings in acute care and rehabilitation programs for persons with traumatic injury. Responsibility for this screening could be assumed by a variety of team members, including representatives from medical, nursing, psychology, or social work departments.

Second, appropriate training of medical and allied health team members to recognize alcohol abuse is essential. Alcoholism treatment program professionals are possible resources for providing this knowledge to physical medicine specialists and rehabilitation care providers.

Third, establishing referral networks to alcohol treatment programs is necessary if potential dual disabilities are to be identified and treated in a timely fashion. In addition, sound communication links must be established so that alcoholism treatment programs and alcoholism counselors learn about the special needs of patients with disabilities. Accessibility needs, functional abilities, and attitudes toward persons with disabling conditions are some of the topics that might be addressed by training programs for alcoholism treatment personnel. Chemical dependence treatment programs designed specifically for persons with physical disabilities are another treatment alternative (Anderson 1980–1981; Lowenthal and Anderson 1980–1981; Sweeney and Foote 1982).

Finally, the findings of this study highlight potential hospital policy issues. Policies regarding possession and use of alcohol and recreational or socialization programs that incorporate alcohol use need to be reexamined and perhaps reformulated in light of studies examining controlled drinking outcomes. Whereas alcohol used in moderation is likely to pose few problems for many patients, those who have histories of alcohol abuse may be encouraged to abuse alcohol by policies and programs that provide opportunities for alcohol consumption. A case-by-case assessment of each patient's history and social needs should precede any exposure to alcohol.

Persons with addiction problems who incur traumatic injury have special needs that require close collaboration of alcoholism treatment and rehabilitation medicine professionals. The opportunity to profit maximally from physical medicine and rehabilitation programs is unlikely if addiction issues are not addressed early after injury. ■

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Double Trouble

Alcohol and Other Drug Use Among Orthopedically Impaired College Students

"Raymond and Charlene" from Incurably Romantic (Temple University Press), © Bernard F. Stehle, 1985.

Students with severe orthopedic impairments may be especially vulnerable to abusing alcohol or other drugs.

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College students are challenged by opportunities to experiment with illegal drugs and by occasions when excessive drinking seems to be encouraged. It is reported that 70 to 80 percent of college students are regular—monthly or more frequent—consumers of alcohol and that only 10 percent report abstinence (Friend and Koushki 1984; Berkowitz and Perkins 1986; Johnston et al. 1986; Saltz and Elandt 1986). Approximately 25 to 40 percent of college students are reported to use marijuana (Friend and Koushki 1984; Johnston et al. 1986).

Students with severe orthopedic impairments may be unusually vulnerable to abusing alcohol and other drugs. Compounding the availability of alcohol and other drugs in many college settings is the availability to many orthopedically impaired students of medications prescribed to ameliorate the effects of their disabilities. Narcotics may be prescribed to ameliorate pain, or antidepressants may be prescribed to relieve depression associated with loss of mobility. At the same time, factors such as low self-esteem, social isolation, and unresolved anger may exacerbate tendencies toward alcohol and other drug use. Dean and colleagues (1985), in a study comparing college drug use patterns between students with and without disabilities, discovered few significant differences between the two groups in frequency and types of drug use. The disabled group reported less alcohol consumption than the nondisabled group, but illicit drug use was approximately the same. The study's disabled population of 66 students included 20 orthopedically impaired individuals, but this subset was not differentiated from other disabilities in the analysis.

Other studies provide contradictory findings. Hepner and colleagues (1980–1981) reported that approximately 25 percent of the clients at a rehabilitation center abused drugs. They also reported that 41 percent of the prescriptions received by their clients were medically unnecessary. A study of over 250 clients at a residential rehabilitation facility reported that the proportion of clients using alcohol and other drugs was much higher than the general population figure for the same average age of 26 years (Rasmussen and DeBoer 1980–1981). A recent study of 205 physically disabled adults (Meyers et al. 1988) suggested that 16 percent of the respondents drink beer on at least 14 days of the month and that the same percentage drink at least 4 beers per episode. In that same sample, 25 percent of the group use marijuana more than once a month.

Possible explanations for the reported tendency of physically

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impaired individuals to engage in alcohol and other drug use range from self-medication to reduce chronic pain or physical discomfort (Sullivan and Guglielmo 1985; Benedikt and Kolb 1986) to more complex psychological rationales. For example, DeLoach and Greer (1981) noted that proneness to use of fantasy as a vicarious form of experience may have unusual significance for persons with physical limitations; alcohol or other drug use may be initiated as a means of escaping reality or enhancing fantasy. In addition, Krupp (1968) suggested that trauma associated with a disabling injury may lead to at least temporary loss of control over use of mood-altering substances, and Prescott (1980) suggested that diminished physical sensation may instigate alcohol or other drug abuse.

A Survey of Alcohol and Drug Use Among Physically Impaired Students

In light of the contradictory findings on the relative incidence of alcohol and other drug abuse among physically impaired young people, the authors undertook an examination of alcohol and other drug use among 57 college students with orthopedic disabilities. Three basic hypotheses were posited based on the literature and clinical observation:

- Nonprescription drug use is higher among students with physical disabilities than it is among nondisabled students.
- Alcohol and other drug choice among students with orthopedic impairments is dictated by factors unique to the disability.[1]
- Trauma victims tend to exhibit more problematic or high-risk use than persons with congenital disabilities.

The study was conducted at a midwestern university that maintains a positive posture toward physically impaired persons. To maintain homogeneity in the sample, participation as a respondent in the study was limited to students who use wheelchairs for primary mobility. School authorities estimated approximately 80 students with this level of orthopedic impairment were actively enrolled during the study period.

A 104-item questionnaire was devised and field tested among orthopedically impaired college alumni before being converted to a self-administered computer test housed in an open computer lab. Active recruitment of subjects included individual solicitations. A total of 57 students (71.3 percent of estimated population) completed the study; this level of participation is perceived to have been a function of the anonymity of the questionnaire and a $10 stipend offered to respondents.

Thirty-eight respondents (66.7 percent) reported that their impairment resulted from either a trauma event or from another postnatal condition; the remaining 19 reported congenital disability. Thirty-five respondents (61.4 percent) were male, and all but two were white. Median sample age was 21 years. Approximately 85 percent of the sample reported living away from their families of origin while attending school, with the majority living in dormitories or other campus housing.

[1] *For example, it was assumed from clinical contacts and previous literature (Malec et al. 1982) that the incidence of marijuana use among orthopedically impaired students would be greater than it was among other college students, due to bladder problems associated with alcohol consumption among physically impaired populations. Survey results indicated that this is not necessarily correct.*

For analytic purposes, the authors created a variable to measure the extent of problems associated with the students' use of alcohol and other drugs. This variable, described as "Problem Use," consisted of an additive score on 18 items similar to those included in the Michigan Alcoholism Screening Test. Answers to questions about students having hangovers, fights, illness, legbag accidents, inadvertent injuries, and class attendance while "high" were among the data compiled along with reported daily consumption patterns of nonprescription drugs (see Table 1). Problem Use scores obtained from this process ranged from 0 (14 respondents) to 15 (1 respondent), with a mean of 3.03 and a standard deviation of 3.35.

Symptoms of problem use were compared with a number of independent variables including respondent age, gender, grades, housing, impairment, chronic pain level, attitude toward impairment, sexual contacts, and medication. Other questionnaire components included the Perceived Benefit of Drinking Scale (Petchers and Singer 1987) and Srole's Anomia Scale (Dull 1983)—both 5-point Guttman scale true/false tests that have been utilized in previous drug studies. The Thrill Seeking Index-SSS scale IV (Zuckerman 1979) also was included with four items adapted to apply to wheelchair users. Thrill seeking scores consistently have demonstrated strong correlations with nonprescription drug use among general college populations (Brennan et al. 1986; Jaffe and Archer 1987).

Results—Trauma Victims Dominate High Problem Use Scores

The overall alcohol and other drug use levels reported among the survey respondents (see Table 2) ap-

Table 1 **Behaviors Contributing to Problem Use Score**

Each item answered affirmatively adds 1 point to the Problem Use score, except as noted.

- Use of medication prescribed for another patient
- Solitary use of nonprescription drugs, including alcohol
- Received medical advice to reduce or eliminate alcohol or other drug use
- Two or more episodes of physical illness following nonprescription drug use
- One or more blackout experiences following alcohol or other drug use
- Involvement in fights while intoxicated or "high"
- Arrest related to drinking or drug use episode
- Trouble with school or dormitory officials due to alcohol or other drug use
- Three or more episodes of attending class while "high" or intoxicated
- Grades have suffered due to alcohol or other drug use
- Loss of friends or other important relationship due to alcohol or other drug use
- Experienced withdrawal from habit-forming drugs
- Self-injury while intoxicated or "high"
- Legbag or bladder accident while intoxicated or "high"
- "Most people around me use less than I do"
- Alcohol, cannabis, barbiturate, amphetamine, cocaine, or narcotic use—Multiple daily episodes (3 points for each drug)
- Alcohol, cannabis, barbiturate, amphetamine, cocaine, or narcotic use—Daily episodes (1 point for each drug)
- Hallucinogen use

This scale is intended for intragroup comparison only. It is oriented intentionally toward serious or recurring symptoms of abuse to discourage "false positive" scores.

Table 2 **Percentage of Respondents Reporting Unprescribed Drug Use, by Drug Group (N = 57)**

Drug Group	Daily or More	Weekly or More	Monthly or More	Less Than Once per Month	No Use
Alcohol	3.5	40.3	15.8	22.8	10.0
Marijuana	1.8	14.0	5.3	19.3	64.9
Barbiturates	1.8	1.8	3.5	5.3	87.7
Amphetamines	1.8	1.8	1.8	10.5	84.2
Cocaine	1.8	—	1.8	5.3	91.2
Hallucinogens	—	—	1.8	7.0*	91.2
Narcotics	—	—	—	3.5	96.5

*Yearly

pear comparable with that of general college cohorts (Friend and Koushki 1984; Berkowitz and Perkins 1986; Johnston et al. 1986; Saltz and Elandt 1986). Data obtained on the Problem Use variable, however, produced striking results. Of the 11 individuals who scored 5 or more on the Problem Use variable, none had a congenital impairment and 9 reported a trauma event as the cause of their physical impairment. Most surprising was the realization that *8 of the 9* trauma victims in this group reported use of alcohol or other drugs at the time of their disabling injury. This fact, combined with their high Problem Use scores, implies that their current alcohol-and other drug-related problems predated their disability.

Similarities among the 11 most problematic users suggest a naturally occurring cohort, representing 19.3 percent of the total sample. Significantly, the results of previous studies indicate that 20 percent of the general college population are either abusers or potential abusers of alcohol or other drugs (Gadaletto and Anderson 1986). As expected from previous literature on alcohol use by college students (Berkowitz and Perkins 1986; Temple 1987), seven of the eight victims of drug-related trauma who scored relatively high on the Problem Use index were men. An unexpected finding was that the two respondents with nontraumatic impairments and high Problem Use scores were women.

Why Are Alcohol and Other Drugs Used at Problematic Levels?

Table 3 provides Spearman correlation coefficients of selected variables with Problem Use scores. The variables correlated most highly with Problem Use were thrill seeking, sexual activity level (probably a covariate of thrill seeking), and

scores from the Perceived Benefits of Drinking Scale. Expected predictor variables of medication levels, chronic pain, anomie, etiologies of disability, and attitudes toward disability did not correlate with Problem Use at significant levels. However, use of the chi square statistical test matching the dichotomous variables of trauma/congenital etiology versus high/low Problem Use score indicated that trauma victims were more likely than congenitally impaired students to score high on Problem Use (chi square of 6.815, $p < .009$).

The use of alcohol and other drugs by the orthopedically impaired college students correlated most highly with social and euphoriant effects, rather than with any perceived stress-reducing or analgesic properties. High thrill seeking, for example, had the highest correlation with Problem Use among this sample, irrespective of variables specific to disability-generated consumption. These findings suggest that physically impaired college students tend to use alcohol and other drugs for reasons common to other college students.

Table 3 **Spearman Correlation Coefficients for Selected Variables**

	Problem Use	Thrill Seeking Index Score	Sexual Activity	Perceived Benefits of Drinking Score
Problem Use	—	.464	.379	.329
Thrill Seeking	—	—	.526	.282
Sexual Activity	—	—	—	.263

The statistic indicated is the correlation of the two variables. The correlation of Problem Use with Thrill Seeking Index Score had a significance of $p < .0003$, and the correlation of Problem Use with Sexual Activity had a correlation of $p < .0037$, as controlled for experimentwise error with alpha = .05.

Significant individual correlations also were obtained for Perceived Benefits of Drinking Scale with Problem Use ($p < .0124$) and with Sexual Activity ($p < .048$).

Table 4 **Respondent Reports of Type of Prescribed Medication**

Medication Category	Percentage of Respondents Reporting Use
Mild tranquilizers and antispasmodics	38.6
Major tranquilizers and analgesics	7.0
Anticonvulsants	1.8
Blood pressure/circulatory	8.8
Antibiotics	29.8
Other	47.4

Medication Use and Alcohol and Other Drug Abuse

A majority of the sample (61.4 percent) reported use of at least one prescribed drug, and 48.7 percent of those on medication (30 percent of the total sample) reported use of at least three prescribed medications concurrently. In fact, 14.3 percent of the students receiving medication used at least five medications concurrently. Estimating pharmacological effects of alcohol or other drugs on multiple prescriptions is extremely difficult and subject to wide individual variation.

Several respondents expressed awareness about the problems associated with drug tolerance and potentiation, but few responded that more education or information was necessary. This perceived lack of need for more information about their medication was contradicted by the results of an exercise in which respondents were provided examples of common medications for each drug class and asked to report prescribed medications by those groups (see Table 4). In spite of examples provided, many students were unable to recognize the appropriate drug class of their medications, as evidenced by the large number of responses in the "other" category.

In addition to the low level of information on pharmacokinetics of their current prescriptions, 43.9 percent of the sample reported receiving no medical information on how their physical impairment might influence alcohol or other drug tolerance.

Summary

The results of this study provide information in three major subject areas—etiologies of problem use among students with disabilities, comparisons of use between disabled and nondisabled students, and concerns about medication.

The findings are intriguing in the support they lend to traditional theories concerning initiation of alcohol and other drug abuse. In this study, these traditional descriptors seemed to hold ascendancy over factors unique to physical

impairment. Abuse of mood-altering drugs, including alcohol, appears to have predated disability for the most problematic cohort in this study. A trauma-related disability correlated with greater likelihood of alcohol or other drug abuse during college than did a congenital disability. This was especially true if the trauma occurred while the individual was under the influence of mood-altering drugs.

The incidence of alcohol and other drug use of this sample appears comparable to use reported for high school and college student populations. As is true in the general college student population, thrill seeking attributes, previous history of drug use, and level of sexual activity correlated with current alcohol and other drug use patterns.

Only 16 percent of the respondents thought that they were overmedicated. However, the issue of prescribed medication interacting with alcohol or other drug use was raised by results indicating that 30 percent of the sample were taking three or more concurrently prescribed drugs. Over one-third of the sample (36.8 percent) reported two or more episodes of physical illness following alcohol or other nonprescription drug use, suggesting the possibility that prescribed medications may potentiate effects of alcohol or other drug use among this population. This is particularly troublesome because much of the medication is used over extended periods of time or in recurring regimens. Alumni in the pilot study had reported planning for evenings of drinking by discontinuing certain medications in advance; however, it is difficult to control unwanted outcomes when the drug actions are not understood by the person attempting to control the drug intake.

Subsequent studies should provide greater understanding of these factors, including understanding of alcohol and other drug abuse episodes that predate impairment. As suggested by Glass (1980–1981), it is important to distinguish between alcohol or other drug abuse that predates the impairment-producing trauma and abuse that postdates it as a reaction to the injuries. The relationship between use of prescribed medication and use of nonprescription drugs, including alcohol, requires further elaboration, as do intervention strategies tailored for the physically impaired alcoholic or drug abuser. ■

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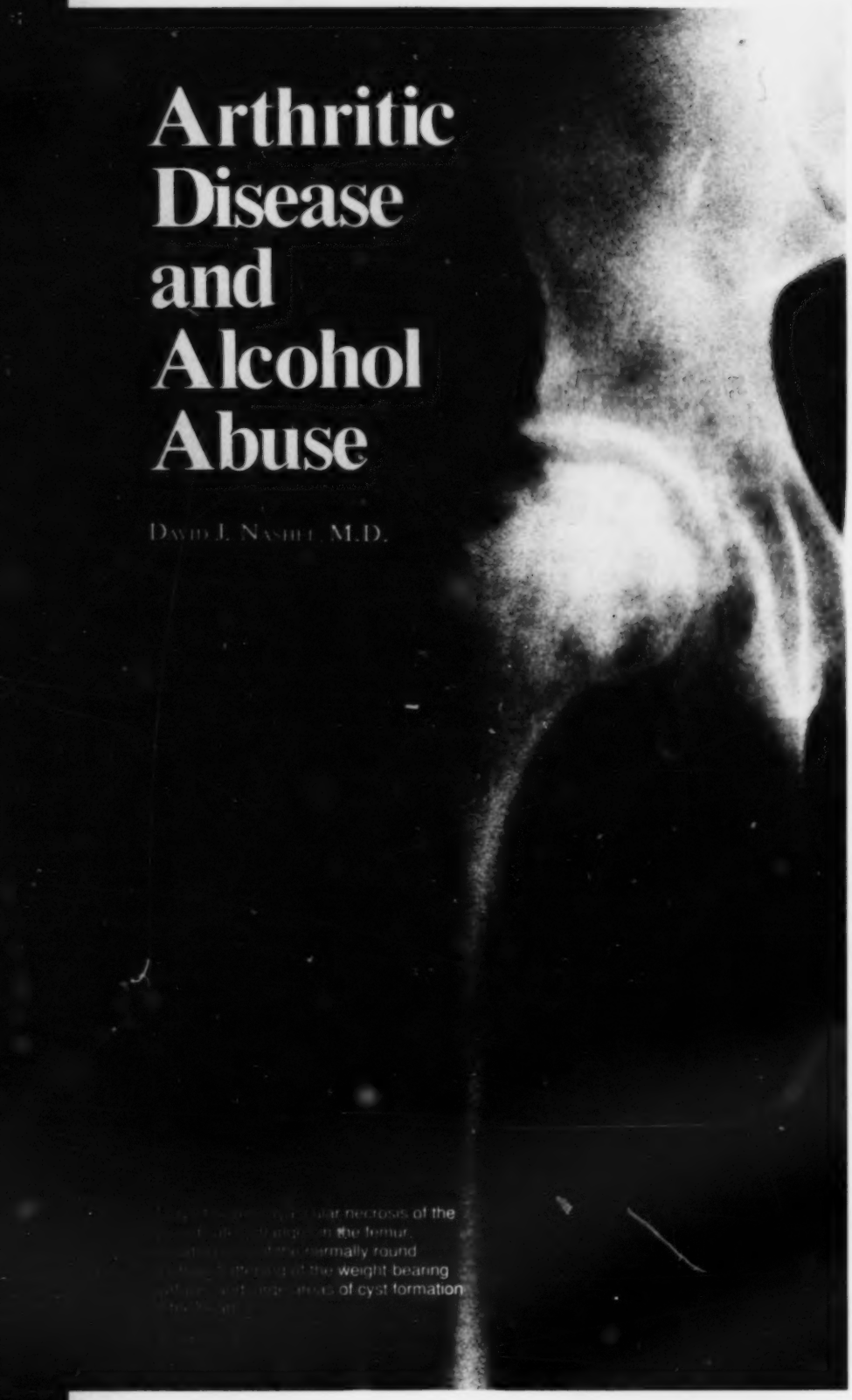
Arthritic Disease and Alcohol Abuse

DAVID J. NASHEL, M.D.



Arthritis is a term used to indicate the presence of a rheumatic condition affecting the joints. A common misconception is that arthritis represents a single illness. In fact, there are more than 100 distinct diseases that may involve the joints.

Many arthritic disorders are chronic in nature, result in significant disability, and require a long-term commitment to management. Together, arthritic and other rheumatic diseases are the most widespread chronic disabling conditions. The U.S. National Center for Health Statistics estimates that nearly 31 million Americans—including more than 5 million between the ages of 18 and 44 years—have at least one form of these conditions. Approximately 6 million suffer activity limitation because of arthritis or other rheumatic disease. These disabling effects are twice as common among women as among men and are especially prevalent among low-income Americans (US NCHS 1984).

Clinicians know that the arthritic diseases have a variety of causes, including infection, metabolic abnormalities, and injury to the immune system. Most individual cases of arthritis can be traced to one or more of these causes without reference to the patient's use of alcoholic beverages. However, it is less widely recognized that chronic

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alcohol abuse may be a predisposing factor for several varieties of arthritis. Further, these disorders may be so severe and crippling that in the mind of both clinician and patient, the arthritic diseases ultimately may overshadow their root cause, which is the alcoholism.

The Alcohol-Gout Connection

Gout is an arthritic disease derived from elevated levels of uric acid in the blood. In some patients with elevated uric acid levels, crystals of urate form in the joints. What ensues is an inflammatory reaction manifested by swelling, redness, and intense pain—the hallmarks of acute gouty arthritis.

In the early phase of the disease, attacks of gout are infrequent and of relatively short duration. Without treatment, a single episode may last from 1 to 2 weeks. With the passage of time, however, gouty flares usually become more numerous and the condition may evolve into one in which there is chronic inflammation involving multiple joints. In this stage, gout is often crippling and deforming and is easily mistaken for longstanding rheumatoid arthritis.

Clinicians long have recognized that acute attacks of gout often are related to overindulgence in alcohol. In a classic treatise on gout, Garrod (1859) stated that:

> . . . the use of fermented or alcoholic liquors is the most powerful of all the predisposing causes of gout; nay so potent, that it may be a question whether the malady would ever have been known to mankind had such beverages not been indulged in. (p. 260)

The association of gout with alcohol abuse is highlighted by a recent study of patients seen in a family practice (Sharpe 1984). In this study, the average weekly alcohol intake of patients with gout was found to be more than twice that of a matched control group.

The bases for the alcohol-gout connection only recently have become clear. We now understand that uric acid is the end product of the breakdown of proteins consumed in the diet and that alcohol causes the body to increase production of uric acid (Faller and Fox 1982). At the same time, lactic acid—produced by the chemical breakdown of alcohol molecules in the body—blocks the normal disposal of uric acid by the kidney. Thus, it is not surprising that elevated uric acid levels in the blood resulting in acute attacks of gout may follow on the heels of a drinking binge.

For many centuries, alcoholic beverages inadvertently have been contaminated by lead. Originally, this resulted from the practice of storing beverages, such as brandy, in lead casks. This contamination provides another connection between alcohol and gout: The term "saturnine" gout is the designation for a variety of the disease that develops when the patient is a victim of lead poisoning. Saturnine gout was particularly common in 18th century England when port "fortified" with brandy was a favorite drink.

Saturnine gout remains a common malady to this day, particularly in the southern United States where the illicit production of "moonshine" whiskey continues. Moonshine frequently contains lead because the whiskey often is distilled using old car radiators as condensers; the lead in the connections contaminates the alcohol. In one study of gout patients admitted between 1970 and 1976 to the Veterans Administration Hospital in Birmingham, Alabama, 36 percent had evidence of plumbism—a chronic form of lead poisoning—resulting from their consumption of moonshine (Halla and Ball 1982).

Special Care in Treatment of the Alcoholic Patient with Gout

Because alcohol so often is an inciting element in the development of gouty arthritis, abstinence is a crucial part of the management of this disorder. In an otherwise healthy individual, an acute attack of gout easily is aborted through the use of any one of a variety of anti-inflammatory medications (Schweitz et al. 1978). However, when the patient has chronic alcoholism, the use of these agents may pose significant risks.

All of the commonly used anti-inflammatory medications, including colchicine and the nonsteroidal anti-inflammatory drugs employed in the treatment of gout, have the potential to irritate the lining of the stomach. Alcohol also irritates the gastrointestinal tract, and as a result, the alcoholic patient is more likely than other patients to develop ulcer disease and gastritis, an irritation of the stomach lining. Both ulcers and gastritis may be associated with blood loss, and there is a risk of acute hemorrhage when anti-inflammatory medication is used incautiously to treat gout in an alcoholic patient (Nashel and Chandra 1982).

Another concern in the use of anti-inflammatory medications is their potential effects on the patient's blood. Alcoholic patients, for a variety of reasons, are more likely than other patients to be anemic and to experience problems with blood clotting. Anti-inflammatory medications also tend to inhibit normal blood coagulation and thus may pose an additional danger to patients in this risk group.

Acute gouty arthritis—although uncomfortable to the patient—is usually self-limiting, and attacks often subside even when untreated. For this reason, it is important to remember the old adage that the cure should not be worse than the disease. Because anti-inflammatory medications pose unique risks for the alcoholic patient, clinicians should consider alternative treatment regimens. Such alternatives include the use of medication for pain relief and the local injection of corticosteroid into the affected joint or joints.

Avascular Necrosis: Difficult To Diagnose and To Treat

Avascular necrosis, also known as aseptic necrosis or osteonecrosis, is another arthritic disorder associated with excessive alcohol intake. With this disease, bone cells die as a result of inadequate blood supply. In the early stages of avascular necrosis, the areas most often affected are the ends of the longest bones. The region of bone affected lies under the cartilage, the dense connective tissue that forms the smooth surface layer of bone and bears the weight of the joints. In time, the cartilage itself becomes damaged. Ultimately, arthritis develops and the joints may be destroyed.

The occurrence of avascular necrosis is correlated with a number of disorders that may limit blood supply to the bone. The disruption of blood flow may result from a fracture, a spasm, inflammation of the blood vessels, or obstruction of the blood vessels by small blood clots. When avascular necrosis is associated with alcoholism, some investigators believe that the vessels supplying blood to the bone may be obstructed by clumps of fat globules known as fat emboli (see, for example, Jones et al. 1965 and Nixon 1983).

Investigations of the drinking patterns of patients with avascular necrosis have found that as many as 39 percent of these individuals have a history of significant alcohol use (Jacobs 1978). Among these patients, the head of the femur—the "ball" portion of the hip joint—is the bone most often affected. Hungerford and Zizic (1978), reporting on 26 patients diagnosed with alcohol-associated avascular necrosis of the hip, indicated an average patient age of 38 years but found 1 patient who was only 16 years old. Particularly tragic was the fact that the disease eventually affected both hip joints in 73 percent of the patients studied.

The earliest symptom of avascular necrosis is pain when using the involved joint. As the disease progresses, however, pain may be present even when the patient is at rest. Unfortunately, there may be a delay from several months to several years between the onset of pain and the time at which changes first become discernible by x-ray. A variety of other diagnostic procedures now can be used to permit earlier detection of the bone disease; among the most promising of these are computerized axial tomography, or CAT scan, and nuclear magnetic resonance (NMR).

Even with timely diagnosis, treatment of avascular necrosis leaves much to be desired. Of course, after the diagnosis has been established, further alcohol consumption must be discouraged. Unfortunately, by the time changes in the bone are evident by x-ray, the disease is likely to have progressed to the point that eventual destruction of the joints is inevitable.

Several surgical techniques have been used in attempts to reestablish the blood supply to the affected bone. However, surgery appears to be only partially effective even when used in the early stages of the disease (Lotke and Steinberg 1985). When pain can no longer be controlled adequately by anti-inflammatory medication and the patient's disability becomes severe, reconstructive surgery with complete replacement of the joint may be necessary.

Alcohol as an Important Risk Factor in Dupuytren's Contracture

Studies of the incidence of Dupuytren's contracture, a disease that involves the palm of the hand and that usually follows a chronic course, suggest an association between cases of this condition and a history of alcohol abuse. The area first affected by the disease is the fascia, a band of fibrous tissue that lies adjacent to the tendons that pull the fingers together into a closed position. In Dupuytren's contracture, the fascia thickens and, eventually, the skin becomes bound and fixed to this fibrous tissue mass. Gradually, at least some of the fingers—usually the fourth and fifth digits—are pulled toward the palm and the patient can no longer fully open the hand.

Dupuytren's contracture often affects both hands in a symmetrical fashion. There appears to be a hereditary predisposition to development of the disorder, and men are approximately seven times more likely to be afflicted than are

women (Turek 1977). The prevalence of the disease gradually increases with age.

Although Dupuytren's contracture has been associated with such diseases as diabetes mellitus and epilepsy, the most striking correlation is with chronic alcohol abuse. Attali and colleagues (1987), examining the prevalence of this contracture among hospitalized patients, found the disease present in 32.5 percent of patients with alcoholic cirrhosis, in 22 percent with other alcoholic liver disease, and in 28 percent with chronic alcoholism and no liver disease. In comparison, they found Dupuytren's contracture in only 6 percent of hospitalized patients with nonalcoholic liver disease and in 12 percent of a matched control group. The same researchers also noted a strong association between the presence of Dupuytren's contracture and total alcohol consumption and discovered a correlation between total alcohol intake and the severity of the contracture.

In another recent study (Bradlow and Mowat 1986), 64 patients admitted for surgical correction of Dupuytren's contracture answered questions regarding their drinking history. Patients with a current or maximum lifetime average daily consumption of 40 grams or more of alcohol—the equivalent of approximately four 10-ounce glasses of beer—were classified by the study's authors as "heavy" drinkers. Thirteen of 54 men with Dupuytren's contracture fell into this category, compared with only 1 of 45 male controls without the disease. Among women, 2 of 10 patients with contracture were classified as "heavy" drinkers, whereas none of the 44 matched female controls reported similar levels of alcohol use. These data lend support to the view that Dupuytren's contracture is strongly associated with relatively high levels of alcohol consumption.

Researchers also noted a strong association between the presence of Dupuytren's contracture and alcohol consumption.

The treatment of Dupuytren's contracture primarily depends on the stage of the disease in which diagnosis is made and on the rate of progression. In the early stages, physical therapy—including local heat, exercises, and corticosteroid injection—may suffice. However, if there is a significant functional deficit or if physical appearance becomes a major concern, then surgery often is necessary.

Arthritic Disease as a Signal for The Possibility of Alcoholism

Each of the arthritic conditions discussed above may result in significant disability to the patient. In many instances, the illness can be directly attributed to underlying alcoholism. This recognition by both physician and patient is crucial because continued alcohol use may further exacerbate these diseases. Although most arthritis has no direct link to alcohol consumption, the definitive management of these three arthritic disorders by clinicians requires identification and treatment of any associated alcohol abuse. ■

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Alcohol Abuse and Persons Who Are Blind

Treatment Considerations

MICHAEL NELIPOVICH, RH.D., AND ELMER BUSS

A 1984 Wisconsin State government survey to evaluate alcohol and other drug abuse services to individuals who are blind or visually impaired led to the conclusion that this is an underserved population. The fact that no significant data are available concerning such services to this group may indicate that persons with impaired vision are not generally perceived by treatment programs as a special client group. Instead, persons with impaired vision often are perceived as isolated cases remembered because of the difficulty and frustration of trying to serve them.

ONSET AND ADJUSTMENT SKILL ISSUES

A person who is blind and abuses alcohol should be considered dually disabled. In developing a treatment plan, several things are important. It is important to determine, if possible, whether the vision impairment or the alcohol abuse occurred first. Because every treatment plan must be individualized, each plan differs in part depending on the circumstances under which the disability begins. If the visual impairment is of long standing and if an appropriate level of acceptance of and adjustment to this impairment has been reached before alcohol abuse begins, then treatment should be geared to addressing the alcohol abuse. If the visual impairment has been more recent, then treatment should focus on helping the client to accept and adjust to the visual impairment first, and then on treating the alcohol abuse. The greatest challenge to rehabilitation professionals occurs when a person suffers from two or more disabilities—such as alcohol abuse and vision impairment—and has accepted neither of them.

Another consideration in developing a treatment plan is the level of the client's adjustment to the condition of visual impairment. All clients, blind or sighted, who are admitted to alcoholism treatment programs have attained some level of independence. In assessing adjustment skills, the goal is to determine whether or not the client can travel independently, can send and receive communication by various means, and can manage clothing and personal needs. Adjustment skills can be measured by asking specific questions about independent mobility, communication techniques, and personal management.

The level of a client's adjustment skills will affect the ways in which the staff of an alcohol rehabilitation facility interact with a visually impaired client. The staff can ask whether the patient travels independently and uses either a long cane or dog guide. Treatment staff, particularly in an inpatient facility, also determine whether or not a client has the appropriate organizational skills to identify clothing. The absence of such skills may impinge upon self-image in a situation in which self-image is already a problem. The pitfall to avoid is treating the blind patient like a child during assessment.

The accurate assessment of adjustment skills by treatment staff

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National Eye Institute

also includes identification of the client's preferred mode of communication. During treatment, clients typically are asked to read a variety of materials that are viewed as beneficial to rehabilitation. Not being able to access the appropriate print can be as big a barrier to treatment as taking steps is to a person in a wheelchair or as group sessions conducted in English are to a client who speaks only Spanish.

The sighted person's first response to the problem of communicating with the visually impaired often is to have material available on tape or to have a sighted person available to read. These are functional approaches, but may not be the best solutions. For example, if an alcoholism treatment client is legally blind but can use print with magnification, treatment facilities can purchase or rent the appropriate device. Alternatively, if a client is a braille reader, the facility can provide at least a copy of the basic material that is already available in braille. The objective is to assist the patient in becoming as independent as possible and to increase choices in rehabilitation.

If assessment of a visually impaired client's adjustment skills indicates that there are major gaps in the client's ability to function independently, alcoholism treatment program staff can contact the local State or private agency that specializes in services to the blind. Treatment facilities also should be prepared to identify community resources that can provide any of the needed services.

Facility Issues

Blindness restricts control of the environment and ease of mobility. Clients are most responsive when treated respectfully and when assumptions are avoided. For example, when staff members orient the visually impaired client to the treatment facility, it is wise to ask whether the client has a preferred way of becoming accustomed to physical surroundings; most visually impaired people have such preferences.

Effective orientation of a blind client to the physical environment of an inpatient facility includes, at a minimum, familiarity with the client's sleeping room, bathroom, meeting rooms, dining room, recreation room, and all exit locations. When sufficient time is spent on the orientation process, the client becomes comfortable with the surroundings. The authors' experience suggests that a staff member or another client should be designated as a guide for the first few days. After this period, most inpatient clients who are blind should be able to travel independently. Some individuals may require more orientation and more guided assistance depending upon the level of their adjustment skills.

Inpatient treatment facility staff should evaluate recreational and leisure time activities to determine their accessibility to visually impaired clients. Again, the local service agency can help to meet the recreational needs of the visually impaired. A multitude of items are available for purchase, ranging from braille playing cards to modified table games and craft kits. The goal is to allow the blind client to participate in the mainstream of activities and not be isolated. The closest library for the blind also can be contacted so that the treatment staff may obtain the adaptive equipment for cassette magazines and other materials that are available for nonprint readers.

The Visually Impaired Person in Alcoholics Anonymous

Many counselors advocate participation in Alcoholics Anonymous (AA) for long-term recovery. The AA system can be most effective for persons who are blind if they can participate fully. Many of the following observations on removing barriers within AA are equally valid for other outpatient treatment and recovery programs.

Interacting with Blind Alcoholism Treatment Clients

Do react to meeting a blind client as when meeting any sighted client for the first time.

Do be sure you speak directly to the blind client.

Do feel free to ask blind persons how much vision they have and how you can best accommodate their impairment.

Do verbalize that you are entering and leaving a room.

Do feel free to touch a blind person on the arm or shoulder to convey warmth, support, and caring.

Don't be oversolicitous toward a blind client.

Don't address remarks about a blind client to his or her companion.

Don't be reluctant to converse openly about the client's visual impairment.

Don't assume communication with a blind person is limited to verbal communication.

Don't be fearful about offering help.

Although AA meetings are available 7 days a week at a wide range of times and locations, their accessibility to the visually impaired recovering alcoholic is limited because of the inability to drive. Taxicabs may provide a solution but can become expensive. If a blind person in recovery wants to attend an AA meeting on Saturday morning and the closest one is 15 miles away, the stress that can result from trying to get there can compound this person's agony. Transportation can make all the difference to a visually impaired alcoholic's struggle to become and remain sober.

If a visually impaired alcoholic is referred to AA from treatment, the referring counselor has a responsibility to make the first arrangements for transportation to the AA meeting of choice. Visually impaired persons should go to the first meeting the best way possible and explain the need for future transportation. A new visually impaired member and AA oldtimers immediately can begin working on a list of friendly drivers. The AA oldtimers at the meeting can be made aware that lack of transportation may result in a serious risk of nonattendance and eventual relapse. Their response is likely to be diligent assistance.

Additional barriers to effective participation in AA meetings include problems related to the environment and to socialization. As in an inpatient treatment facility, it is important to orient the visually impaired person to the surroundings—where entry doors are, how the room is shaped, how the tables and chairs typically are arranged, where the coffee pot is, and where the bathrooms are located. These are basic facts that a sighted person quickly determines upon entering a room, but that cannot be taken for granted for a person with impaired vision. It also is important to appreciate that it is awkward for a visually impaired person to move freely in a crowded room, and assistance should be provided when necessary.

The process of socialization in an AA meeting is assisted when someone introduces the visually impaired member to several other attendees. Members should adopt the courtesy of identifying themselves when speaking and telling the blind person when they are departing (see sidebar on personal interaction with visually impaired persons). Many sighted people become nervous when addressing an individual who cannot make eye contact when speaking, and this nervousness can promote a feeling of negative self-worth and isolation that is detrimental to recovery. To counter this, an oldtimer can be assigned to promote introductions and stimulate conversations between the visually impaired person and others until interaction occurs easily.

It is important to provide alternative communications to reduce the barriers to full participation in AA—and other outpatient settings—by the visually impaired alcoholic. The schedule and a list of meeting locations can be made available in braille. Taped items can be prepared with the visually impaired recovering alcoholic in mind. It is wise to have audiotapes of *The Big Book* and *Twelve Steps and Twelve Traditions,* but if these audiotapes are not labeled in braille, the blind alcoholic will not be able to determine their contents. Audiotapes used in recovery can also be tone or voice indexed for the blind, and readers can indicate when one side is over.

When audiotapes are prepared for the blind, the appropriate playback speed is 15/16 rpm instead of the standard 1-7/8 rpm. The slower playing speed saves space and cost: For example, one version of *The Big Book* at 1-7/8 rpm contains six cassette tapes, with two sides per cassette, and costs $25, whereas a 15/16 rpm version can be recorded on a single cassette and can be made available for significantly less cost. Of course, many audiotapes are prepared primarily for sighted people to use in standard tape decks, but with limited modification, taped AA material can be made much more accessible to the blind.

The Need To Reach Out

Alcohol- and other drug-related problems exist among the blind, and individuals involved in treatment services should be aware of the responsibility for serving this population. Developing the skills necessary to serve this group directly affects the treatment outcome for blind individuals with alcohol-related problems, as suggested by the results of an earlier survey of agencies serving the blind (Nelipovich and Parker 1981). Sixteen counselors who participated in that study could find no employment for any visually impaired alcohol abusing client. However, eight counselors successfully found employment for one-half of the visually impaired client population. The greater the knowledge and the more highly developed the skills of the counselor, the better the prospects for rehabilitation of the visually impaired alcohol abusing clients.

The authors strongly suggest that the professionals in alcohol and other drug treatment services consult with agencies serving visually impaired persons. ■

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...with denial of family alcoholism
...exacerbated when children of
... (COAs) also are visually

Intervention with Visually Impaired Children of Alcoholics

CHRISTINE SAULNIER

Children of alcoholics (COAs) are generally acknowledged to be at increased risk for developing alcoholism. At the same time, the incidence of alcoholism is higher among the disabled than among the general population (Hepner et al. 1980–1981; Hindman and Widem 1980–1981; Greenwood 1984; Gallagher 1985; Sylvester 1986). Therefore, one would expect visually impaired COAs to be at especially increased risk.

Peterson and Nelipovich (1983) estimate that there are 40,000 visually impaired alcoholics in the United States. The number of visually impaired COAs is not known. However, concern about the problem is raised by suggestions made in a treatment group for visually impaired adolescent and young adult COAs run by the author. Four out of five members of this group use alcohol, and one-half of those who use alcohol abuse it. In each case in which the child is abusing alcohol, both parents are alcoholic. Both parents are alcoholic in three out of four group members.

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Despite the scope of the problem, treatment services for alcoholics and COAs rarely are designed specifically for the visually impaired. In part, this lack of special services is due to the process of "mainstreaming," in which it is assumed that the visually impaired can rely on services geared to meet the needs of the general population. Suggestions in the literature have been limited to educating addiction treatment professionals regarding visual impairments and adding low-vision aids to current alcoholism treatment programs to accommodate the needs of the visually impaired (Glass 1980–1981; Nelipovich and Parker 1981).

On a policy level, the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment, and Rehabilitation Act Amendment of 1979 (42 U.S.C., 1980) requires that alcoholism treatment services be made available to "handicapped" persons. In practice, access to alcoholism and other mental health services for those with physical disabilities has been limited for the following reasons:

- Service providers lack education and training in disabilities awareness (Gallagher 1985).
- The desire to comply with the

"normalization" campaign that focuses on how well people with disabilities fit into the larger society (Gallagher 1985) leads some people with disabilities to minimize or deny genuine treatment needs.

- People with disabilities fear the double stigma of disability and dependence on alcohol and other drugs and are therefore reluctant to seek treatment (Boros 1980–1981; Hindman and Widem 1980–1981; Lowenthal and Anderson 1980–1981).

This article presents strategies for overcoming some of the difficulties encountered in treating visually impaired COAs. It is based on the author's experience with a treatment group for COAs residing in a school for the visually impaired. When asked what would be the most important piece of information to convey, members insisted that readers be made to understand that the similarities between visually impaired COAs and their sighted peers far outweigh the differences. While this is true, it also should be noted that the problems shared by all COAs are apt to be compounded and intensified when visual impairments are present. The family alcoholism counselor's treatment approach and emphasis therefore depend on the needs of the specific client and on whether or not the client already has access to special services.

The Nature of the Impairment

Awareness of a number of facts about the nature of visual impairment helps health care providers to avoid clinical misinterpretations.

First, it is important to remember that visually impaired does not necessarily mean completely blind. Ninety percent of visually impaired people have some degree of sight (National Society to Prevent Blindness 1980). If the client does not request assistance, the clinician should ask what specific assistance is needed; trying to force unneeded help is counterproductive. Other common mistakes include ignoring the visually impaired client and addressing a companion, equating blindness with deafness and shouting at a visually impaired person, or looking around the room rather than directly at the person being addressed.

The alcoholism treatment professional needs to monitor any tendency toward decreased expectations of visually impaired clients.

Occasionally a client may exhibit rocking, eye poking or pressing, hand flapping, and head rolling. These behaviors, known as "blindisms," are unrelated to mental illness and are not indications of pathology, although they may increase in frequency or intensity when the client is under stress. They are most common in people who are totally and congenitally blind. Some visually impaired persons who exhibit these behaviors have been misdiagnosed as autistic. Although autism does occur among the blind, a diagnosis of autism based solely on the occurrence of blindisms would probably be inaccurate.

It would also be a mistake to assume that sloppiness in self-care or dress is a permanent condition or that it is necessarily related to visual impairment. This may be a sign of depression, or the client may simply need to be reminded that others are favorably affected by the appearance of a well-groomed person. The author periodically consults with personal management instructors to decide who will address these issues and to clarify whether the problem is emotional or skill based.

Finally, the alcoholism treatment professional needs to monitor any tendency toward decreased expectations of visually impaired clients. If group members are expected to do "homework," such as reading, writing, or attending a meeting or activity, the visually impaired clients should be held to the same expectations. As one group member said, "If they all clean ashtrays [at Al-Anon meetings], I'll clean ashtrays."

Counseling the Recently Impaired

One of the first steps in beginning treatment is to determine whether the client has only recently become impaired. If so, additional therapies may need to be incorporated into the alcoholism treatment to address the special emotional and physical needs of the newly impaired. Consultation with a vision expert is recommended at this stage.

It is important to note that the use of confrontational techniques may be a mistake at this time. This approach, so useful for breaking through a COA's denial of family alcoholism, might be psychologically harmful to a newly impaired client, whose primary need is support. The alcoholism treatment professional should assist the client in accepting the impairment and integrating it into self-concept in a positive way.

In addition to the loss to which the client must adjust and to possible related depression, the newly

impaired person faces architectural, attitudinal, and employment barriers (Glass 1980–1981) that may be initially overwhelming, decreasing the client's ability to cope with family alcoholism and possibly even increasing the risk of the client's own drinking. The client's awareness of both the limitations and potential for compensating for vision loss may need to be discussed. Encouraging or arranging interactions with other visually impaired persons will help decrease the client's sense of isolation and the fear of inability to cope.

Problems in Treatment: Denial and Guilt

Denial of family alcoholism is a common phenomenon among COAs. The problem may become more complicated when the COA is visually impaired. Clients sometimes seem to interpret the adage "seeing is believing" quite literally, disregarding information that they have obtained through their other senses. For example, as evidence of alcohol abuse, hearing a parent's slurred speech seems to be less convincing than seeing the parent's unsteady gait.

Another problem of perception is that group members tend to evaluate the seriousness of a parent's drinking problem based on their personal interactions with the parent rather than on objective observation. Clients often discount the seriousness of a drinking episode because it did not cause clear, immediate trouble between the alcoholic parent and other family members—"My mother and I didn't fight last night, so she didn't have too much to drink." The concept of alcoholism being harmful to the alcoholic also seems more difficult to communicate to visually impaired COAs.

The prevalence of denial among COAs does not preclude a sense of guilt and responsibility for the family's problems. Here, too, this conviction seems harder to dispel with visually impaired COAs. Statements such as "If only I'm good enough, my dad will stop drinking" are common among COAs; a variation that surfaced among members of the author's treatment group was the belief that if they were not visually impaired they would be better able to help their alcoholic parents. It is necessary to state repeatedly that eliminating the client's visual impairment would not eliminate the parent's alcoholism and that inability to cure the disease is not related to lack of sight.

Clients sometimes insist that if they saw better, they would be less of a burden to the parent. They may even wonder if the reason the parent drinks is because he or she views the child as defective. Realistic discussion of how the visual impairment affects the parent's life sometimes convinces group members that their impaired vision is more of an inconvenience to themselves than to their parents and that parental inconvenience, while it does exist, does not cause alcoholism.

In breaking the silence about family alcoholism, visual impairment should not be substituted as a taboo topic.

Problems in Treatment: Discrimination and Self-Image

The virtually constant struggle against discrimination is one of the issues that sets this treatment group apart. The stigma of family alcoholism, together with the negative associations of being blind—for example, the stereotype of the blind person as a beggar (Glass 1980–1981)—can have a devastating effect on self-esteem, exposing the visually impaired child to an even higher risk of continuing the family alcoholism. Therefore, values clarification sessions must focus not only on beliefs about alcohol consumption and alcoholism but also on beliefs about visual impairments and the culture's view of competence.

For example, people may react with surprise, embarrassment, anger, or even disbelief when they discover that a visually impaired person can see. A partially impaired COA who has been subjected to such reactions may need reassurance and support with respect to the reality of his impairment and the validity of his self-image.

The specifics of each client's visual disability are open for discussion in the author's group, and a conscious effort is made to identify and accept one another's needs; group members are not necessarily aware of one another's abilities nor are they particularly adept at articulating their own. In breaking the silence about family alcoholism, visual impairment should not be substituted as a taboo topic.

As with other COAs, group members are encouraged to reexamine their view of themselves as unlovable. Clients need to be reassured that visual impairments and other injuries, even when these are secondary to alcoholism (for example, fetal alcohol syndrome or trauma resulting from alcohol-related accidents), do not make

them unlovable, nor were they deliberate acts planned by their parents to harm them.

Visually impaired COAs may be even more inclined to see themselves as different from other COAs and as not capable of being helped. To combat this perception and to encourage interaction with nondisabled peers, group members are encouraged to join Alateen or Al-Anon. The combination of special services that directly address their specific needs and traditional services for COAs seems to work well.

There is also a tendency by others to regard the lack of normal vision as a "supreme catastrophe [rather than] a nuisance that can be circumvented or overcome" (Selvin 1976, p. 420) and to see the visually impaired person as being incapable of taking care of himself or herself. All the members of the author's treatment group have been subjected to annoying, damaging pity regarding their impairment and their capacity to cope.

The children in the author's treatment group are taught to avoid accepting the negative impressions others may have of them. The image of vision loss as a supreme tragedy is discussed, challenged, and emphatically denied. Group members are encouraged to focus on their skills and their ability to compensate for their impairment. They are reminded of their academic achievements, their homemaking and cooking skills, and their success in such varied activities as acting, music, athletics, and overcoming negative behavior patterns.

The tendency of others to overprotect the visually impaired person interferes with the goals of family alcoholism treatment. In adulthood, when other COAs may be extricating themselves from the dysfunctional family system, the visually impaired COA may receive less support for leaving because of a perceived need to be protected by the parents.

Therefore, the need for independent living should be identified during the "aging out" process—the time when the client makes the transition from special education to adult services, usually between the ages of 21 and 26 (depending on the State). The clinician can contact the coordinator of the education plan and urge that this goal be incorporated into the transition plan.

Coping with Violence

The combination of overprotection and involvement in special education may lead the professionals serving the COA to a false impression of safety regarding the physical dangers of family alcoholism. Even in a residential school setting, risk is not eliminated—some children with special needs still go home to alcoholic families.

Therefore, it is essential to review realistically the visually impaired COA's vulnerability to danger and violence (Hindman 1977). Group members are encouraged to explore their increased risk, to examine coping skills they have developed in other arenas to compensate for visual impairments, and to apply the compensatory skills to this situation. The special education system teaches COAs how to seek assistance, how to call a telephone operator, and how to call a taxicab or the police if necessary. The author's group discusses the advantage of keeping emergency cab fare available and of memorizing telephone numbers of friends and relatives who could come to their assistance if needed.

Group members discuss the danger of trying to intervene in violent situations. They are encouraged to plan a course of action to be followed in violent situations: for example, whether it may be safer to call someone or to leave; and if they leave, how they will leave, where they will go, and by what route. Independent travel promoted by the special education system is reinforced in consultation with the orientation and mobility trainer to ensure that students will not be exposed to further risk by taking an unfamiliar route or traveling by a method they are not skilled in using.

Outreach

After a conference in which alcoholism counselors and disability rehabilitation professionals shared information and treatment techniques, Lowenthal and Anderson (1980–1981) suggested outreach procedures to identify physically impaired alcoholics and to inform them of treatment options. Their suggestions included developing a referral directory and disseminating information in writing, over the telephone, and through community education workshops. Supplying clients with information in braille or on tape is another possibility (Peterson and Nelipovich 1983).

Mobility and personal management services may need to be provided to visually impaired clients, particularly for alcoholism treatment in a residential setting (Glass 1980–1981).

Despite the importance of outreach efforts designed to break through denial (Bean 1988), the lack of systematic inquiries designed to identify alcohol and other drug abuse among persons entering a rehabilitation program is a serious procedural problem. Hindman and Widem (1980–1981) advocate the inclusion of relevant questions during the intake interview.

It is important to note, however, that the alcoholism treatment professional places the special education system in a precarious position

when requesting that the system either confront a parent about family alcoholism or provide treatment without parental consent (NIAAA 1983). The system in this case runs the risk of alienating the family and, as a result, perhaps having the parents withdraw the child from the special education program. In some circumstances, special education officials may need to be informed about laws regarding the treatment of minors without parental consent (see Croxton et al. 1988). To ensure that alcoholism awareness is part of the special education milieu, arrangements must be made to provide in-service training to clinical and educational staff.

Written screening policies currently are being developed in the setting of the author's treatment group for incorporation into the students' initial evaluation. Memos are sent periodically to social workers and psychologists working with visually impaired students, reminding them that the treatment group exists and that it accepts referrals. Memos are followed up in person, and the clinical supervisor is asked to help monitor students for alcoholism treatment needs. Cross-consultation between rehabilitation professionals and alcoholism professionals, suggested by Lowenthal and Anderson (1980–1981), will be provided through a local university's course on rehabilitation of persons with physical impairments.

Taking the First Practical Steps

The alcoholism treatment professional can compensate for gaps in knowledge or experience regarding visually impaired clients by consulting with specialists and taking continuing education classes. Placement on the mailing list of agencies serving visually impaired people will remind the alcoholism treatment professional of the needs of this population. In turn, the alcoholism service provider should keep the agencies serving visually impaired persons informed of the availability of treatment and counseling services. Integration of knowledge can occur in much the same way as, for example, learning to work with a client who is both alcoholic and diabetic. By asking for help, alcoholism service providers may find willing consultants among those who serve the specialized needs of the visually impaired.

Service providers in rehabilitation are encouraged to examine their commitment to normalization to ensure that it does not interfere with the ability to acknowledge alcoholism. The message of normalization is that an impaired person is, first of all, a person, not to be defined by his or her impairment. However, normalization can become counterproductive if it leads to actual denial of the impairment or of problems such as alcoholism. Rehabilitation specialists might be asked to provide consultation to alcoholism treatment professionals when a client is referred for services. Alcoholism service providers can assess their skills and capacity for providing treatment, consult with those who have complementary skills, and actively seek to acquire new skills so that visually impaired abusers of alcohol and other drugs and visually impaired COAs can have their therapeutic needs addressed. ■

The lack of systematic inquiries . . . to identify alcohol . . . abuse among persons entering a rehabilitation program is a serious problem.

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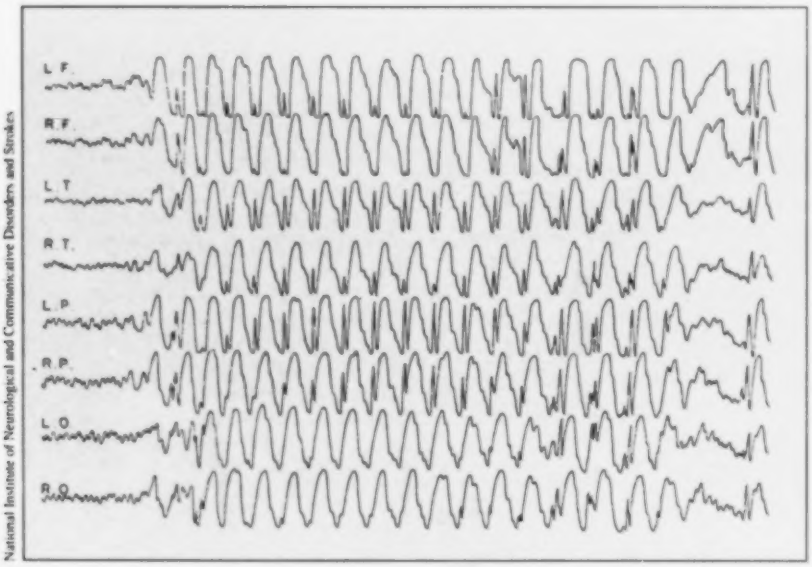
Epilepsy, Seizures, and Alcohol

MICHAEL J. STOIL, PH.D.



These wavy line tracings of the electroencephalogram (EEG) show normal brain wave patterns recorded from eight sites in the brain (far left), followed by the steep "spike and wave" EEG pattern associated with one type of epileptic seizure.

A child sits on a hospital bed with her head wrapped in bandages, chatting cheerfully with a visitor about her doll collection. Without warning, she falls silent and her head lolls back against the pillow. The child remains motionless for several seconds and then recovers, resuming her conversation without interruption.

A college student is cramming late at night for a midterm examination, at a desk lit by a flickering fluorescent light. He suddenly becomes aware of a peculiar taste in his mouth, reminiscent of cherries. As soon as the sensation passes, the hand holding his highlighting marker begins to twitch spasmodically. Although the student tries to control the movement, the tremor becomes more violent and gradually "walks up" the arm until every muscle below the shoulder seems to be affected. Moments later, the tremor stops abruptly and the student—shaken in more ways than one—returns to his books.

Members of the emergency room staff examine the pedestrian victim of an early morning traffic accident. The patient's clothes and breath smell strongly of spirits, and the patient alternately complains of his injuries and demands a drink. Staff members are not surprised when the patient enters into convulsions that threaten to topple him from the hospital gurney.

These three cases are examples of seizure phenomena. Clinically documented for centuries, seizures formerly were believed to result from the disease of epilepsy. Scientists now agree that the term epilepsy is similar to the term cancer in that both terms are applied generically to several conditions with differing symptoms, consequences, and perhaps mechanisms. In general, epilepsy involves erratic electrical activity arising from within the central nervous system (CNS), including the brain. The pioneering studies of William Gordon Lennox (Lennox 1941) and Maurice Victor and colleagues (Victor and Adams 1953; Victor and Brausch 1967) were particularly important in defining a relationship between alcohol use and nervous system disorders, including epileptic seizures. This work led to identification of the potential risk for seizures resulting from alcohol abuse and to improvements in the study of possible causes and controlling mechanisms for seizure phenomena.

What Is Epileptic Seizure?

An epileptic seizure can be defined as the sudden disruption of normal brain function due to hyperactivity in one or more areas of the CNS. Under nonseizure conditions, groups of nerve cells, or neurons, operate without synchronization—at any given moment, some neurons are discharging electrochemical impulses, some are resting, and some are priming for the next discharge. In primary epilepsy, seizure-related CNS hyperactivity occurs when groups of neurons synchronize their discharges as a single unit. This phenomenon is known as the seizure discharge.

The effect of CNS hyperactivity

MICHAEL J. STOIL, PH.D., served as Special Focus Editor for this issue of Alcohol Health & Research World.

on brain function may be analogous to the effect of a flood of incoming telephone calls on a telephone switchboard—the receipt of incoming messages beyond the switchboard's capacity causes the lines to cross and calls to become disconnected, placed on hold, or switched to the wrong party. A similar "communications" snarl within the CNS translates into a variety of clinical results, depending on the site in the nervous system where the seizure originates. Although many laymen think of epilepsy as limited to the spectacular general convulsions and blackouts of the tonic-clonic or grand mal seizure, epilepsy also produces such diverse phenomena as the simple partial seizure in which the patient is aware of the convulsions and the nonconvulsive complex partial seizure associated with hallucinations and memory lapses.

Virtually anyone may experience an epileptic seizure, given the right combination of conditions. According to Lennox (1960), individuals vary in their predisposition to seizures. For some people with a low seizure threshold, an infection or a mild head injury may be enough to trigger the occurrence of seizures. These individuals are most likely to be diagnosed with primary epilepsy. Other people seem to have a high seizure threshold and are more resistant to precipitating factors. The results of recent experiments demonstrate that at least some predisposition toward seizure is genetically inherited—for example, scientists have selectively bred seizure-prone and seizure-resistant animals (see, for example, Mishra et al. 1988). Other experiments have demonstrated that seizures can be initiated deliberately through a "kindling" process of CNS stimulation (see, for example, Mucha and Pinel 1979 and Freeman 1981).

According to W. Allen Hauser, M.D., professor of public health and neurology at Columbia University, the prevalence of epilepsy in the general population ranges between 6 and 10 cases per 1,000. In other words, as many as 1 person per 100 experiences epileptic seizures sometime during his or her life. Epilepsy is slightly more prevalent among men than among women, and more than one-half of all cases involve onset after the 18th birthday (Hauser 1988).

Neurologists divide epilepsy into two categories. Symptomatic epilepsy is associated with known origins, including tumors, infections, and injury to the nervous system. Primary epilepsy has no clearly identifiable cause other than genetic predisposition. Most cases of recurrent epileptic seizure involve primary epilepsy.

In some instances—as in the example of the overworked student cited earlier—a specific seizure episode can be associated with precipitating conditions including sleep deprivation or exposure to a flickering light source. It is not clear, however, why the conditions that precipitate seizures differ among seizure-prone people or why behavior as universal as the act of falling asleep occasionally triggers convulsions. Many aspects of primary epilepsy remain a mystery.

Alcohol and Precipitation of Seizure

Clinicians long have observed that alcoholic beverages play a role in triggering seizures (Buchan 1800; Gowers 1893). Seizures following intoxication are known as "rum fits," "withdrawal seizures," or "alcoholic epilepsy," as distinguished from primary epilepsy.

An estimated 20 to 25 percent of newly diagnosed adult cases of epilepsy have no risk factors other than a history of alcohol abuse (Hauser et al. 1988). According to Hillbom (1980), almost one-half of 560 seizure patients admitted during 1 year to the emergency department of a hospital in Helsinki, Finland, had been intoxicated within 12 hours of the incident. Similarly, a study of 566 patients in a detoxification unit in the United States showed that nearly one-third evidenced seizure symptoms at the time of admission (Gerson and Karabell 1979).

CNS hyperactivity is involved in both "alcoholic epilepsy" and primary epilepsy. Nevertheless, clinical studies have demonstrated that the diagnostic tool known as an electroencephalograph (EEG) can distinguish between the brain wave patterns of epileptic patients and 90 percent of all other patients admitted for alcohol-related seizures (Hauser et al. 1982; Deisenhammer et al. 1984; Vossler and Browne 1988). This distinction and the failure of most patients with alcohol-related seizures to develop other epileptic symptoms suggest that "rum fits" are different from primary epilepsy.

Findings on the prevalence of the relationship between alcohol use and seizures raise important scientific questions because beverage alcohol or ethanol is essentially a CNS depressant. In addition, ethanol has been perceived and occasionally prescribed as an anticonvulsant. One therefore might postulate that alcohol reduces hyperactivity and makes seizures *less* likely. For this reason, scientists and clinicians specializing in the nervous system are investigating the specific mechanisms involved when seizures are associated with alcohol abuse.

The Withdrawal Hypothesis at the 1988 Alcohol and Seizures Symposium

In September 1988, an international symposium on alcohol and seizures

was held in Arlington, Virginia, under joint sponsorship of the American Epilepsy Society and the Epilepsy Foundation of America. Twenty-nine distinguished speakers and 18 poster session presenters from 7 countries exchanged research results and working hypotheses on the basic mechanisms and clinical management of alcohol-related seizure. Many of the described studies reflected NIAAA's support of research exploring the possible origins of alcohol-related seizure within the complex interaction of the neuron with its environment.

Ivan Diamond, M.D., Ph.D., professor of neurology at the University of California at San Francisco, provided symposium attendees with an overview of the issue (Diamond 1988). According to Diamond, most scientists believe that the phenomenon of withdrawal rather than the act of consuming the drug alcohol itself is the prime culprit in alcohol-related seizures. Until recently, it was thought that such phenomena as alcohol dependence, tolerance to the drug's effects, and withdrawal take place only after long-term alcohol abuse. Recent experiments, however, indicate that these alcohol dependence phenomena may be observed at the cellular level following a single drinking occasion. Such experimental observations at the cellular level may explain why seizure phenomena, similar to those observed in some drug addicts who are experiencing withdrawal, can occur following an isolated drinking binge.

Diamond noted that the search for biochemical processes involved in seizure generation during withdrawal from alcohol focuses on three elements of the CNS. Some scientists are examining the membrane of the neuron itself for rapid or long-term alterations associated with alcohol use. Others are examining alcohol-related effects on neuron receptors and ion channels—nerve cell structures directly involved in receiving, transmitting, and inhibiting electrochemical impulses. A third group is investigating the possibility that alcohol changes the body's ability to maintain a supply of nutrients to the neurons.

Diamond cautioned against assuming that any seizures produced by withdrawal must be related to the body's adaptation to alcohol. He reminded symposium attendees that withdrawal and associated seizures alternatively may result from CNS reaction to indirect effects of alcohol consumption. Support for Diamond's warning was provided in a presentation by John P.J. Pinel, Ph.D., professor of psychology at the University of British Columbia (Pinel et al. 1988). Pinel and colleagues studied the effects of administering alcohol prior to kindled (artificially induced) seizures compared with the effects of administering alcohol following seizures. Their findings revealed that timing of the administration of alcohol relative to the inducement of seizures was critical to producing tolerance to the anticonvulsant action of alcohol on the body. Pinel concluded that this tolerance is an adaptation to one of the effects of alcohol on the body—that is, the anticonvulsant activity that prevents or dampens seizures—rather than an adaptation to alcohol's presence in the body.

Experimental observations at the cellular level may explain why seizure phenomena . . . can occur following an isolated drinking binge.

Robert J. DeLorenzo, M.D., Ph.D., professor of neurology at the Medical College of Virginia, summarized for symposium attendees the state of the art in searching for the cause of alcohol-related epileptic seizure at the level of the individual neuron (DeLorenzo 1988). Focusing his remarks on success in observing alcohol-related changes in neurotransmitters—chemicals that activate neuron receptors and ion channels—DeLorenzo stated:

> [I]n neurobiology over the last 10 years . . . we've gone from not examining the role of neurotransmitters at all to new focus on the individual neurotransmitter to overall changes in the neurotransmission process. In effect, we're going from "the receptor of the month" to deciding that everything is related to excitability. We now must look at unifying concepts: which observed changes mean something significant? When 50 [cellular] receptors [for neurotransmitters] change value in response to alcohol withdrawal, does that mean that all 50 are related to alcohol withdrawal or only that some of them are related?

Other symposium attendees agreed with DeLorenzo's prescription of integrating separate research findings into unifying concepts. They acknowledged that years of work lie ahead in trying to determine which of the many observed CNS changes following exposure to alco-

hol are most important in defining alcohol withdrawal at the cellular level and in explaining how withdrawal may precipitate seizures.

Is the Withdrawal Hypothesis Correct?

Within the past year, some researchers have challenged the assumption that alcohol withdrawal is the mechanism responsible for alcohol-related seizure. One of the most sophisticated examinations of the alcohol withdrawal hypothesis has been presented by Stephen K.C. Ng, M.D., Ph.D., assistant professor of public health and pediatrics, and his colleagues at Columbia University. Using a combination of clinical studies and statistical findings from computer modeling techniques, Ng and his colleagues questioned the validity of alcohol withdrawal as the source of seizures for the following reasons:

- The withdrawal hypothesis is incompatible with the drinking history of most patients admitted for alcohol-related seizures. Only a minority of these patients had reduced consumption sufficiently to produce withdrawal prior to the onset of seizures.
- Computer modeling found that the time lapse between cessation of drinking and onset of seizures did not support the withdrawal hypothesis and that 16 percent of alcohol-related seizures occurred after 2 weeks of sobriety.
- Computer modeling found that seizure onset was more likely to be related to the level of drinking than to withdrawal (Ng et al. 1988).

Ng and his colleagues raised the possibility that alcohol has a dose-dependent relationship with seizures and that seizures may result from direct toxic effects of the drug.

Although some clinicians support the view that alcohol withdrawal is *not* the culprit in alcohol-related seizure (Koppel et al. 1988), others argue that more than one replication of the Ng research is necessary before discarding the alcohol withdrawal explanation for alcohol-related seizure. Roger P. Simon, M.D., wrote in a recent editorial in *The New England Journal of Medicine:*

> The issue of whether alcohol-related seizures are caused by alcohol itself or by alcohol withdrawal cannot be considered settled. . . . [T]hat seizures occur as a direct effect of alcohol use and that they occur as a manifestation of alcohol withdrawal may not be mutually exclusive propositions (Simon 1988, p. 716).

Risks for Seizure Among Epileptics Who Drink

Almost 50 years ago, Lennox (1941) affirmed that epileptic patients are neither more nor less likely than other populations to abuse alcohol. Although comprehensive data are lacking, more recent surveys often confirm that the drinking patterns of individuals with primary epilepsy are similar to the prevailing drinking patterns of their culture (Hoeppener et al. 1983). An exception to this general rule is provided by Johnson (1985), who interviewed primary epileptics in the Wellington, New Zealand, metropolitan area. Johnson stated that 20 percent of epileptics reported drinking the equivalent of 80 grams or more of pure ethanol per day compared with 6 percent of the general New Zealand population.

Studies of epileptics who occasionally drink alcoholic beverages indicate that seizure occurrence may be associated with their drinking. Mattson (1988) surveyed 112

Patients . . . who control their seizures through medication should be advised of the risks . . . from the indirect effects of drinking.

seizure-prone patients who used alcohol at nonabusive levels and found that 20 percent reported some increase in seizures "the morning after." Similarly, Johnson (1985) reported that 12 percent of primary epilepsy seizures "were probably precipitated by ethanol in patients who could not be said to have a major drinking problem." Controlled experiments conducted with low doses of alcohol, however, have not verified any increase in seizure activity among patients with primary epilepsy (Hauser et al. 1988).

Epileptics who drink to intoxication encounter higher risks, in part because of the indirect effects of alcohol consumption on management of their condition. As noted by Simon (1988), an evening of drinking may provoke a seizure through alteration of the normal sleep routine. Intoxication may result in failure to maintain anticonvulsant medication used in the treatment of epilepsy (Johnson 1985). The interaction of alcohol with drugs used in treating epilepsy may reduce the effectiveness of medication, increase the rate at which medication is used by the body, or produce potentially dangerous side effects. Finally, intoxication is a major risk factor for accidental injuries that may trigger epileptic seizures.

Should a physician counsel absti-

nence to a patient with primary epilepsy? In practice, a survey of a sample of clinicians throughout Europe conducted by the Epilepsy Centre of the Netherlands indicated that national culture influences the type of advice that is given: Physicians in wine-producing and -consuming nations were less likely than physicians in northern Europe to urge epileptic patients to abstain from alcohol use (Hoeppener 1988). During informal discussions, American physicians attending the international symposium on alcohol and seizures were divided on the justification of complete abstinence for patients with epilepsy—many held the view that any additional risk for seizure or for reduced effectiveness of anticonvulsant medication is unacceptable.

At a minimum, patients with primary epilepsy who control their seizures through medication should be advised of the risks to seizure control from the indirect effects of drinking behavior, as cited by Simon (1988) and Johnson (1985). Patients also should be monitored carefully for symptoms of alcohol abuse because of the potentially serious consequences of intoxication.

It may be wise for patients with primary epilepsy to carry identification that would help hospital emergency room staff to make an appropriate diagnosis. Although most cases of alcohol-related seizure can be distinguished from primary epilepsy through the use of an EEG and family history (Deisenhammer et al. 1984), the pressures of time and caseload may delay these procedures in the emergency room setting. When a patient is unable to respond to family history questions, it is possible that clinicians may prefer to withhold long-term anticonvulsant medication in the belief that the convulsive patient is displaying alcohol-related seizure rather than primary epilepsy. ■

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Alcohol and Other Drug Abuse by the Physically Impaired

A Challenge for Rehabilitation Educators

BOBBY G. GREER, PH.D.

Alcohol and other drug abuse is a problem among some clients with physical impairments (Anderson 1980–1981; Boros 1980–1981; Greer 1986), although the scope of the problem is not known precisely (Hindman and Widem 1980–1981; Greer 1986). Thurer and Rogers (1984) found that 53 percent of a sample of physically impaired clients rated help with alcohol or other drug problems as a "substantial need" or "great need" among the physically impaired.

The lack of services to meet this need can be traced in part to the training received by rehabilitation counselors, who often are taught to expect that their future clients will have only one disability. When multiple disabilities are discussed in rehabilitation education, they usually are described in terms of such pairings as brain injury with convulsive disorders, cerebral palsy with speech problems, and low back injury with a learning disability. Physically impaired clients with alcohol or other drug problems often are described in training materials as having one primary disability and almost never as having long-term dependence on alcohol or other drugs.

This article examines possible explanations for the lack of discussion of alcohol and other drug problems in most counselor training programs. It also presents some strategies to rectify this omission.

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AN APPROPRIATE INTERVENTION ROLE FOR REHABILITATION COUNSELORS

In the author's view, four general guidelines on the appropriate role of the rehabilitation counselor in intervention for alcohol and other drug abuse can be inferred from the ethical standards and principles of the profession (as discussed in the accompanying sidebar):

1) The rehabilitation counselor who knows that a client abuses alcohol or other drugs, and that the abuse may interfere with the

University of Nevada

Rehabilitation educators need to talk with counselors about their attitudes regarding alcohol and other drugs.

client's rehabilitation program, is professionally obligated to bring this fact to the client's attention. The counselor should apprise the client of all available intervention options.

2) The rehabilitation counselor should make alcohol or other drug abuse intervention a part of the Individual Written Rehabilitation Plan, if the client consents.
3) The client has a right to refuse any suggested intervention.
4) If the client refuses intervention and if the client's persistent abuse of alcohol or other drugs will seriously impair potential benefits from rehabilitation services, the counselor may terminate services to the client. Services should be terminated only after reasonable effort to secure the client's compliance has failed. Upon termination, the counselor is obligated to refer the client elsewhere.

The abuse of drugs prescribed by a physician is a specific area of client drug abuse in which direct confrontation by the rehabilitation counselor may not be indicated. Diazepam (Valium), for example, can be abused (Hepner et al. 1980–1981), and a counselor may have reason to believe that a client is receiving and/or using diazepam beyond appropriate therapeutic limits. In such situations, the counselor would, without delay, confer with the rehabilitation agency's medical consultant. If the patient is found to be abusing a drug that is prescribed within therapeutic limits,

Professional Ethics and Alcohol and Drug Abuse in Rehabilitation Counseling

How far should a rehabilitation counselor go in identifying a client who has an alcohol or other drug abuse problem in addition to one or more physical impairments? Some authors assert that any intervention goes beyond appropriate roles and duties. For example, one of the major introductory textbooks in vocational rehabilitation states:

> Paternalism can often be confused with caring. What the counselor knows is best for the client can get in the way of true respect of the client's autonomy and independence. If a client with emphysema, knowing full well the dangers of smoking, decides not to give up cigarettes, should the counselor respect that decision or attempt to change it? If a client who received a $5 million settlement from the automobile accident that landed him in the rehabilitation center decided to forego the arduous task of extended physical and vocational rehabilitation, and be dependent instead, should the rehabilitation counselor persistently encourage him to "maximize his potential?" The goal of "making" the client as independent as possible contains inherent contradictions if the client is denied the freedom to choose not to be independent. Professional and medical approaches toward disabled persons emphasize changing the client. Disabled persons . . . are opposed to client change as the primary focus (Rubin and Roessler 1987, pp. 117–188).

Although this concept complicates the answer to how far a counselor should go in dealing with a client's abuse of alcohol or other drugs, there are ethical standards in the profession that support an activist role. One canon incorporated in the Professional Ethics for Rehabilitation Counselors (National Council on Rehabilitation Education 1988) states:

> Rehabilitation counselors shall respect the integrity and protect the welfare of people and groups with whom they work. The primary obligation of rehabilitation counselors is their clients, defined as people with disabilities who are directly receiving services from a rehabilitation counselor . . (p. 67).

Since the ultimate objective of the rehabilitation counselor is the *total* rehabilitation of the client, this canon implies that the counselor has a professional obligation to confront an alcoholic client regarding the abuse and to develop a strategy for dealing with the problem. When the counselor is responsible for the development of an Individual Written Rehabilitation Plan (IWRP) for a client who abuses alcohol or other drugs, the intervention strategy can become an integral part of the IWRP.

—*Bobby G. Greer, Ph.D.*

the medical consultant, not the counselor, would decide what action to take. Similarly, if it is suspected that the client is receiving a larger than therapeutic dose of a psychoactive medication, the medical consultant would intervene; the counselor is bound by professional ethics to avoid confrontation with the client on the issue of the practices of the treating physician.

Curriculum Issues in Rehabilitation Counselor Education

The traditional model for graduate programs in rehabilitation counseling was established in the mid-1950s (Wright 1980). Although aspects of this model still are debated, most curriculums closely resemble a model proposed in 1956 (Graves et al. 1987; Wright 1987; Walker and Myers 1988). This course work typically consists of 1) an introduction to vocational rehabilitation, 2) medical aspects of rehabilitation, 3) psychosocial adjustment to disabling conditions, 4) assessments in vocational rehabilitation, 5) counseling technique and practice, 6) occupation information and career development, 7) current topics in rehabilitation (often taught as a seminar), 8) an internship experience, and 9) electives.

As noted earlier, publications used in this curriculum tend to avoid the topic of multiple disabilities, including the pairing of physical impairment with alcohol or other drug dependence. Only one text on psychosocial adjustment to disability, for example, mentions alcohol and other drug abuse (Vash 1981). Two significant publications stand as exceptions to the general rule of omitting alcohol and other drug abuse from teaching materials used in the rehabilitation education curriculum. One of these is the computer-generated simulation program developed by Chubon (1986). The other exception is a brief discussion of the impact of alcohol and other drug problems on the development of the rehabilitation plan for disabled clients incorporated in the training materials for the Preliminary Diagnostic Questionnaire or PDQ (Moriarty 1982). The PDQ, a preliminary screening tool, has two questions dealing with client abuse of alcohol and other drugs.

To improve coverage of alcohol and other drug issues in rehabilitation counselor education, professionals in the field need to address the paucity of literature on this topic. Specific topics that may be included are definition of terms, epidemiology, social and family effects, client education needs, pharmacology and pathology, and legal and ethical issues (NIAAA 1985). The *AID Bulletin*,[1] a quarterly newsletter about alcohol and other drug abuse among persons with disabilities, is particularly useful. Another potential resource is the bibliography of materials related specifically to alcohol and other drug abuse among the physically/intellectually impaired, available from the National Clearinghouse for Alcohol and Drug Information (NCADI 1987). Graduate students in rehabilitation education should be encouraged to contribute to the literature on alcohol and other drug use among the disabled by conducting research on the topic.

Another necessary component of curriculum revision is the inclusion of casework experiences in existing courses and fieldwork. Such experiences could be modeled after those developed for education in other health professions (ADAMHA 1986). This approach would incorporate four basic elements:

- integration of relevant alcohol and other drug abuse content into existing courses and seminars
- inclusion of alcohol and other drug abuse program facilities in clinical experiences involving practicum and internship sites
- exposure during fieldwork to such self-help groups as Alcoholics Anonymous, Al-Anon, and Narcotics Anonymous
- participation in client experiences—including role playing and videotaping (see Spickard et al. 1989)—as well as exercises designed to clarify the students' own values concerning alcohol and other drug use. These experiences also could include simulations designed to explore approaches to confronting the manipulative client.

Education To Dispel Harmful Attitudes

The process of educating rehabilitation counselors on issues relating to alcohol and other drug abuse among clients with physical impairments is complicated by the prevalence of potentially harmful attitudes and beliefs among counselors. Attitudes that could be addressed during the education of rehabilitation counselors include the following:

- having expectations that are lower than they should be for clients with alcohol-related problems
- the belief that "mourning" behaviors or the lack of "normality" justify client abuse of alcohol

[1] *The* AID Bulletin *publishes feature articles, announcements, and notices of new programs that would be helpful and informative for both faculty and students in rehabilitation counseling programs. The acronym AID stands for Addiction Intervention with the Disabled. Further information on the* AID Bulletin *can be obtained from Alexander Boros, Ph.D., Department of Sociology, Kent State University, Kent, Ohio 44242.*

- misplaced sympathy that can be manipulated by an alcohol abusing client
- acceptance of abuse of alcohol or other drugs as the norm based on the counselor's own problematic use.

Two independent studies (Allen et al. 1982; Goodyear 1983) have documented a marked negative attitude among rehabilitation counselors toward clients with alcohol-related problems. One of the most ominous findings of both studies is that many counselors considered the rehabilitation potential of such clients to be minimal or nonexistent.

A second factor influencing perceptions of rehabilitation personnel toward alcohol or other drug abuse behavior is the "requirement for mourning" identified by Wright (1983). This "requirement" implies that persons with physical impairments are viewed by most nondisabled individuals as being in a state of loss. In this state, the individual is expected to "mourn" the loss by exhibiting such behaviors as denial, depression, and lack of motivation. Some nondisabled individuals include alcohol or other drug abuse as a mourning behavior that may be *expected* of a physically impaired person.

DeLoach and Greer (1981) identify "deification of normality" as a similar phenomenon, in which the absence of impairment is perceived by the nondisabled as the only desirable state of existence. When an individual adopts this rigid belief, all manner of maladaptive behavior—including alcohol and other drug abuse—is justified by the physically impaired client's lack of "normality." Awareness of an alcohol problem in a disabled individual thus may provoke the reaction, "If I were that poor so-and-so, I would drink myself into oblivion too!"

The need to confront student counselors about their attitudes . . . presents a challenge to rehabilitation educators.

Another confounding factor is the ability of many disabled clients to manipulate nondisabled persons and to play on their sympathy. Vash (1981) states that some tendency toward manipulation is necessary for persons with severe impairments to function effectively. However, Greer and colleagues (in press) cite a case in which a disabled individual applied much of his skill at generating sympathy to the procurement of drugs. Many nondisabled counselors and counselor trainees view disabled persons—especially those disabled from birth—as being naive, innocent, and free from the vices of so-called "normal" people. If a manipulative client works with a counselor who holds such an attitude, the results can be extremely counterproductive.

The counselor's attitudes toward his or her own use of alcohol or other drugs may further complicate the issue. Because there are few data documenting the nature and prevalence of counselor attitudes toward alcohol and other drug use, data from other health professions may provide insight. The results of recent surveys indicate that as many as 95 percent of medical students use alcohol and 53 percent have used other drugs (NIAAA 1985, p. 33). This same source indicates that 10 percent of such students drink excessively. If the prevalence of alcohol and other drug use is similar among rehabilitation counselor trainees, it is possible that their attitudes toward alcohol or other drug use among their future clients may tend to be permissive.

The need to confront student counselors about their attitudes toward alcohol or other drug use presents a challenge to rehabilitation educators. Such student attitudes vary from condemnation of any use of alcohol or other drugs to permissive tolerance of clearly excessive use, with most counselors' attitudes falling somewhere between these extremes. Either extreme is counterproductive in interacting with a disabled person who is abusing alcohol or other drugs.

An NIAAA curriculum guide for alcohol and other drug abuse education for pediatricians suggests including in the curriculum a discussion of the abusing health professional and the effects of such abuse on the professional's judgment, learning, decisions, and overall professional productivity (NIAAA 1985). Although this approach could be adopted for rehabilitation professionals, the NIAAA curriculum guide notes that discussion of such issues in a course format tends to be "impersonal, generalized, or intellectualized" (p. 33).

Another workable solution to the problem may be inviting students to discuss with the instructor, outside of class, their own concerns about their use or abuse of alcohol and other drugs. Also, students with academic or personal problems may be provided an opportunity to explore the possibility of alcohol or other drug use as a contributing factor to these problems.

Another approach that may encourage examination of attitudes toward alcohol and other drug use

is to supplement class sessions with audiovisual materials. One curriculum for health professionals (Liepman et al. 1986) offers a comprehensive appendix of videotapes and films designed to stimulate such exploration.

All student counselors need to be exposed to the issue of clients who abuse alcohol or other drugs: The profession can do no less than make the effort to shape the views of future counselors according to facts rather than myths about the issue. ■

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Results of a Model Intervention Program for Physically Impaired Persons

SHARON SCHASCHL, R.N., B.S.N., AND
DENNIS STRAW, C.C.D.P.

For many persons with disabilities, alcohol and other drug dependence imposes far greater limitations than their physical impairment. The problems created by alcohol and other drug dependence frequently are attributed to the physical impairment, and a great deal of time, energy, and money may be spent treating the "symptoms" rather than the disease of dependence. Failure to address alcohol and other drug dependence adequately may prevent successful rehabilitation and adjustment to disability, lead to increased medical complications of the physical impairment, and interfere with progress toward independent living. For this reason, disabled persons require access to alcohol and other drug abuse prevention efforts and to early alcohol and other drug dependence evaluation, intervention, and treatment.

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OBSERVATIONS ON PERPETUATING FACTORS

Factors that perpetuate alcohol and other drug dependence among those with physical impairments include the negative attitudes that other people exhibit toward both physical impairment and alcohol and other drug dependence, the scarcity of knowledge and skills to treat the dual problems of alcohol and other drug dependence and physical impairment, and the scarcity of specialized treatment programs for this group.

Among these, the negative attitudes commonly held toward both physical impairment and alcohol and other drug dependence may be the most difficult to overcome. Physically impaired persons often are perceived as hopeless, helpless, fragile, and sick. "Physical impairment" is commonly equated with "illness," fostering the beliefs that physically impaired persons are incapable of assuming responsibility for themselves, require repeated hospitalizations, and must depend on medication to function.

In addition, a person who is physically impaired may face added stigma and may not receive help that is needed because he or she also is abusing alcohol and/or other drugs. Sometimes, health care providers and counselors, and also family and friends, don't acknowledge or address the impaired person's use of alcohol and other drugs. Well-meaning caretakers and loved ones may even encourage use of alcohol and other drugs due to the misperception that the alcohol helps the impaired person to socialize, to experience pleasure or happiness, and possibly even to feel "equal" with more able-bodied people. These well-meaning caretakers may even see that alcohol and other drug abuse is self-destructive, but they don't want to deny the disabled person the individual "right" to elect to use the alcohol and other drugs.

There is often an erroneous assumption that all of the problems experienced by people with physical impairments are related primarily to the impairment. Yet, persons who are abusing alcohol and other drugs—whether physically impaired or not—function well below their potential and may experience problems in any or all of the following areas of their lives: physical, emotional, spiritual, social, sexual, family relationships, legal, vocational, and financial. These problems may be manifested by frequent health problems and/or hospitalizations, low self-esteem, poor personal hygiene, dependent lifestyle/living arrangements, association primarily with alcohol and other drug users, lack of motivation, significant personality

changes, memory deficits, depression, rejection of beliefs that once were important, isolation from family and friends, and involvement in unhealthy relationships. The affected person may become a victim or a perpetrator of sexual abuse or inappropriate sexual behavior, suicide attempts, arrests, incarceration, loss of driver's license or public transportation privileges, unemployment, failure in school, and lack of vocational involvement and may have difficulty meeting basic financial obligations. Problems and events such as these may be attributed to the physical impairment, when in fact alcohol and other drug use may be a significant contributing factor.

Recognizing all of the factors that perpetuate alcohol and other drug dependence among those with physical impairments—the consequences of negative attitudes combined with the lack of knowledge, skills, and specialized treatment approaches—calls out for the development of model intervention programs.

A Model Intervention Program for Physically Impaired Persons

In 1983, Abbott Northwestern Hospital/Sister Kenny Institute in Minneapolis, Minnesota, implemented the Chemical Dependency/Physical Disability Program, designed to meet the specialized needs of physically impaired persons. The program staff members include a program coordinator, who is a Certified Chemical Dependency Practitioner (CCDP) and an experienced physical rehabilitation nurse, and a program consultant, who is a CCDP and is disabled and recovering from alcohol and other drug dependency. The work of the program staff affects three distinct areas: the Minneapolis community, the physical rehabilitation units and Chronic Pain Rehabilitation Program at Sister Kenny Institute, and Abbott Northwestern Hospital's alcohol and other drug dependence treatment center.

In the community, alcohol and other drug dependence treatment staff of Abbott Northwestern Hospital conduct workshops to increase awareness and to provide direction in identifying and referring physically impaired clients with alcohol or other drug dependence. The staff members also provide consultation for community program development.

On the physical rehabilitation units and in the Chronic Pain Rehabilitation Program at Abbott Northwestern Hospital/Sister Kenny Institute, members of the program staff provide evaluations of alcohol and other drug dependency for patients and consultation and education for patients, staff, and families of patients.

In the alcohol and other drug dependence treatment center, members of the program staff coordinate a physical disability component integrated with Abbott Northwestern Hospital's established Chemical Dependency Treatment Program. The premise for establishing the disability component is that the clients may have unresolved social, psychological, and medical problems associated with their physical impairments and that these problems need to be addressed to facilitate treatment of continued alcohol or other drug dependence.

Physically impaired patients now comprise 5 to 10 percent of the total patient population in the alcohol and other drug dependence treatment center. Patients with physical impairments are expected to participate with able-bodied patients in all scheduled program activities. Program adaptations have been made to accommodate physical limitations to assure full participation. For those patients requiring personal care services, Abbott Northwestern Hospital's home health care agency schedules certified nursing assistants for 2- to 3-hour periods in the morning and evening. Nursing care, treatments, medications, and any additional assistance throughout the day are provided by the regular nursing staff members. Physical therapy and occupational therapy are ordered only if necessary to maintain the patient's level of functioning.

The Chemical Dependency/Physical Disability Program coordinator and program consultant provide individual counseling and support to patients and their families for physical impairment and dependency issues and, with two other professionals, lead a weekly peer support group for recovering physically impaired persons. The staff of the Chemical Dependency/Physical Disability Program offers assistance to counseling and medical staff to address the problems of physical impairment in the context of treating the primary illness of alcohol and other drug dependency. Program staff members also assist in formulating aftercare plans that address needs of physically impaired, alcohol-dependent clients. The program staff members are available for followup consultations, education, and awareness training to reintegrate the physically impaired person into the community.

An important element of the Chemical Dependency/Physical Disability Program is the weekly support group led by four professionals who are experienced in counseling those with alcohol and other drug dependency as well as physical impairments. The group first met in August 1983 with one member and three facilitators. Attendance steadily increased and a consistent weekly attendance of 20 participants has been maintained over the past year. There currently are 17 active core members, 6 of whom received treatment at other

facilities. Length of membership ranges from 2 months to 3 years. Sobriety represented is 2 months to 13 years. Although nearly 50 percent of the members are between 30 and 40 years old, the age range of the group is from 20 to 60 years, with an average of approximately 34 years.

The group generates discussion about disability issues that do not apply for regular treatment group meetings. Each member is encouraged to relate personal concerns. The peer support and diverse experience of the group members provide fertile ground for personal growth and creative thinking as members begin to integrate into an able-bodied society.

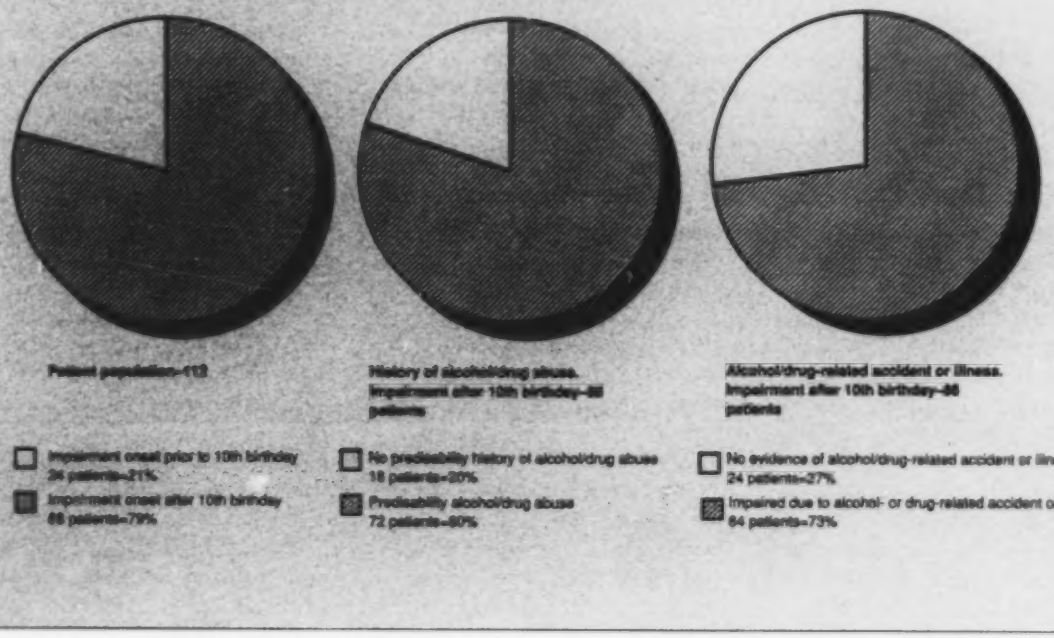
Demography and Onset Characteristics of the Patient Population

An analysis by primary diagnosis of the patients admitted to the Chemical Dependency/Physical Disability Program from its inception through early 1988 revealed that three primary diagnoses—spinal cord injury, brain injury, and chronic pain—accounted for more than one-half of all diagnoses. Spinal cord injury was the most prevalent, representing one-fourth of the sample. In contrast, patients with sensory impairment accounted for less than 7 percent of the total number of patients admitted. Persons with hearing impairments usually are referred to other specialized programs.

There is a widespread belief that physical impairment causes alcohol and other drug dependency. For persons whose disabilities were the result of a traumatic injury, several studies (Anderson 1980–1981; O'Donnell et al. 1981–1982; Sweeney and Foote 1982; Heinemann 1986) indicate that the majority were involved in alcohol- or other drug-related accidents and were experiencing problems related to their alcohol and other drug use long before the onset of their physical impairment. As shown in Figure 1, statistics from the first 5 years of the program indicate that, of the 88 clients with onset of disability after the 10th birthday, 72 clients (80 percent) were dependent on alcohol or other drugs prior to the onset of their disability. Alcohol or other drugs contributed to the disabling injury or illness of 64 clients (73 percent of all clients with later onset disability).

Among the 24 patients in the program who were congenitally disabled and dependent on alcohol or other drugs, the majority had been receiving prescribed medications with mood-altering effects since childhood and lived in protective environments in which their alcohol and other drug use was controlled and external stressors were minimized. When these pa-

Figure 1 **Patient Population by Onset of Impairment and Alcohol and Other Drug Abuse**


Patient population=112
History of alcohol/drug abuse. Impairment after 10th birthday=88 patients
Alcohol/drug-related accident or illness. Impairment after 10th birthday=88 patients
Impairment onset prior to 10th birthday 24 patients=21%
Impairment onset after 10th birthday 88 patients=79%
No predisability history of alcohol/drug abuse 16 patients=20%
Predisability alcohol/drug abuse 72 patients=80%
No evidence of alcohol/drug-related accident or illness 24 patients=27%
Impaired due to alcohol- or drug-related accident or illness 64 patients=73%

tients left the home environment and attempted to enter fully into an able-bodied society, external stressors increased. They may have increased their alcohol or other drug use in an attempt to cope with the increased stress.

The majority of the program participants have become dependent on alcohol, usually in combination with marijuana or other illicit drugs. Prescription medications frequently are used as well.

Outcomes: The Crucial Role of the Support Group

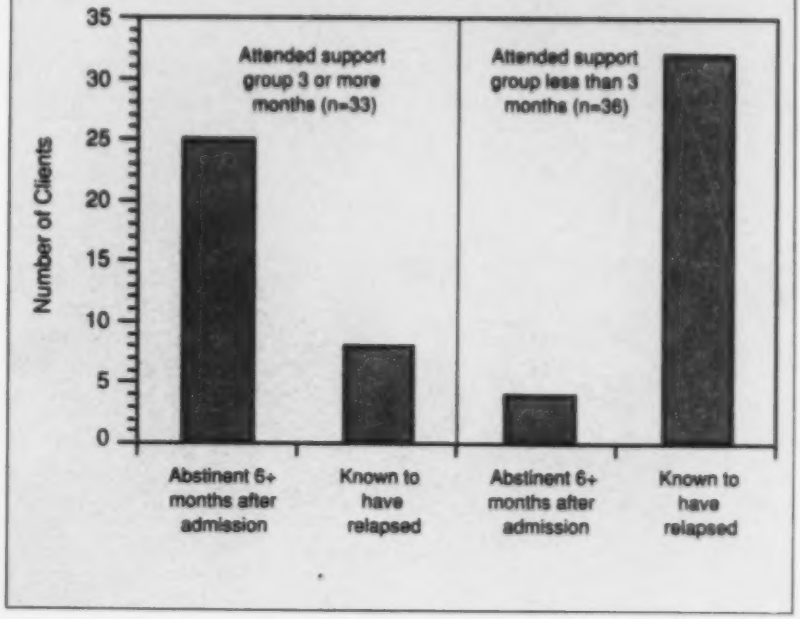
Based on successful followup of 69 patients admitted through February 1988, there appears to be a direct correlation between those persons who stay active in the disability support group and those who report complete abstinence from alcohol and unprescribed drugs for a minimum of 6 months after admission (see Figure 2). The followup rate of 62 percent admittedly is low, but results obtained from self-reports of former clients are consistent with observations gleaned from leading group sessions in the Chemical Dependency/Physical Disability Program.

Physically impaired patients often resist participating in the group, and most have had to be required to attend initially. Denial is evident when severely disabled patients refuse to attend the group, stating, "I've already adjusted to my disability," "I'm not like those people," "It depresses me to be around those people," or "What right do you have to label me 'disabled'?" Those persons who do readily attend the group for the first time frequently expect support for use of alcohol and other drugs; they expect others to "understand" that their physical impairment "justifies" their use of alcohol and other drugs. These patients are often disappointed and frustrated when, in contrast to their expectations, they find understanding of their feelings relating to their physical impairment and support for achieving a lifestyle free of alcohol and other drugs. Commitment to the program comes with participating in the group and being willing to address the physical impairment and beginning to identify with the group as a whole.

Those persons who choose to remain free of alcohol and other drugs and to become actively involved in a recovery program gain self-esteem and self-responsibility and begin the process of accepting their disabilities. They are experiencing better health and developing alternative means of managing chronic pain, sleep disorders, spasticity, and stress. New social experiences are replacing isolation, and healthy relationships are replacing abusive, dependent ones. Many are developing more independent lifestyles/living situations, are becoming involved in vocational-avocational activities, and are resolving financial and legal difficulties.

The first 5 years of our program have been a formidable challenge and tremendous learning experience. We would like to thank those persons who have allowed us to be a part of their recoveries. ■

Figure 2 **Comparison of Followup Results—Effect of Support Group Participation (n = 69)**



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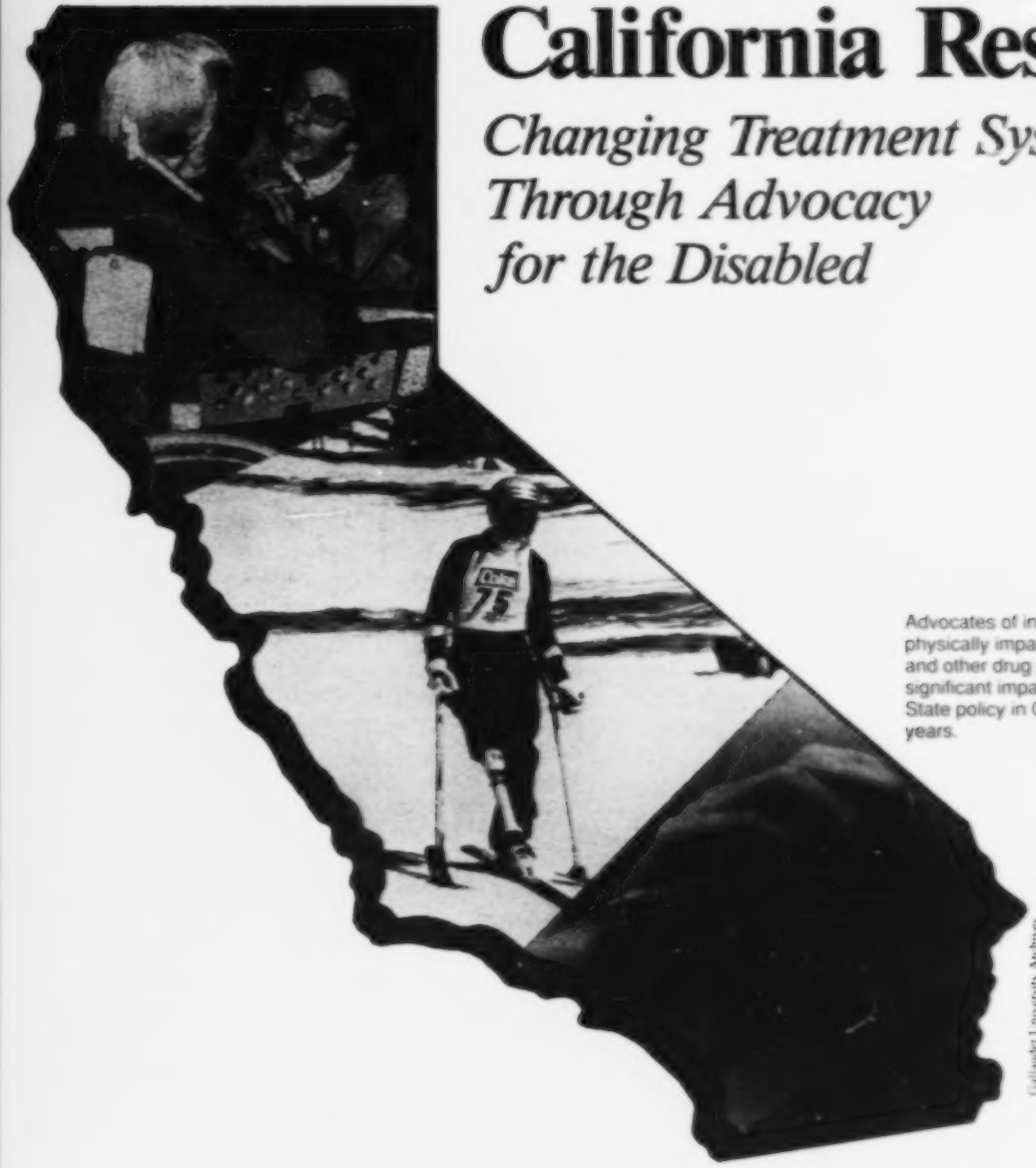
California Responds

Changing Treatment Systems Through Advocacy for the Disabled



Advocates of institutional change for physically impaired persons with alcohol and other drug problems have had a significant impact on local services and State policy in California during the past 10 years.

Gallaudet University Archives

JOHN DE MIRANDA, ED.M., AND LINDA CHERRY

Advocates for institutional change can have a major effect on program accessibility and the creation of quality alcohol and drug abuse services for persons with disabilities. Although institutionalized treatment systems often appear lethargic in meeting the needs of the physically impaired, such systems can be invigorated through a process of activism, documentation of existing problems, and education. Events in California during the past 10 years demonstrate how individuals working through coalitions at the community level can have significant impact on local services and State policy.

THE DISABILITY SUBSTANCE ABUSE TASK FORCE

The acknowledged patriarch of the alcohol, drug, and disability movement in California is Pete Ander-

son. While working in the Veterans Administration (VA) hospital system during the 1970s, Anderson became concerned about the disabled veterans who experienced serious, unaddressed problems with alcohol and other drugs. His uneasiness with the status quo extended to the publicly funded recovery system, which then appeared to be largely unaware of the needs of persons with mobility and sensory impairments. Anderson's frustration was fueled by difficulties he encountered in attempting to convince both the VA and the California Department of Alcohol and Drug Problems that services were grossly inaccessible to this community. He recalls:

> It was a struggle to bring in AA and NA [Alcoholics Anonymous and Narcotics Anonymous]. The professional staff were very reluctant to introduce significant change into the program because change involved risk-taking. . . . Similarly, patients were not really encouraged to leave the facility and to learn to live in the community. The program's external activities might include "rolling" across the street to a store or a once-a-week bus excursion to a museum. I was considered a troublemaker because I believed the patients ought to be living in the community and taking a bus once a week to visit the hospital! (personal communication, September 1, 1988)

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To remedy what he saw as the unjust exclusion from alcohol and drug abuse services of people with disabilities, Anderson and others founded the Disability Substance Abuse Task Force. He and Alan Lowenthal, associate professor of community psychology at California State University-Long Beach, also established programs at Lowenthal's institution to provide educational workshops, technical assistance, and legislative advocacy (Lowenthal and Anderson 1980–1981).

Lacking significant funding, the Disability Substance Abuse Task Force initially relied on the volunteer efforts of its membership, in-kind donations from community-based programs, and occasional government support. Anderson describes this period as the "touch-and-go years" because of the difficulties encountered in sustaining interest in the issue. The problems were exacerbated by the lack of widespread awareness of the provisions of section 504 of the Rehabilitation Act of 1973 among community-based alcohol treatment programs. This legislation states that individuals cannot be denied admission to a federally funded program on the basis of a disability. Full compliance often requires considerable financial expenditure for architectural modifications, communication devices, sign language interpreters, and other resources.

These initial difficulties gradually were overcome during the 1980s, and the Disability Substance Abuse Task Force—since renamed the Congress on Chemical Dependency and Disability—is now an effective advocate for accessibility of treatment services throughout southern California. In part through the efforts of the coalition, the Los Angeles County Office of Alcohol Programs, one of the largest purchasers of treatment services in the Nation, recently required all new programs to be fully accessible to persons with physical impairments (County of Los Angeles 1988). All Los Angeles County alcohol service delivery contracts now include specific language mandating that each program prepare and annually update a plan for increasing the accessibility of its services to disabled persons. These plans must include a separate report on services to hearing impaired clients. In addition, all programs funded by Los Angeles County must maintain participant registration forms that include identification of clients with disabilities other than alcoholism, including sensory and mobility impairment, developmental disabilities, and mentally disabling conditions.

In 1987, neighboring Orange County convened a Disabled Access Coordinating Committee to ensure alcohol treatment program compliance with section 504 of the Rehabilitation Act of 1973. Activities of the committee included a needs assessment and facilities survey that produced a series of recommendations to improve accessibility throughout the alcohol abuse services system. Susan Zepeda, Ph.D., deputy director of county alcoholism services, notes that the committee's recommendation to develop a southern California regional database of disabled service recipients is a first step toward the creation of regional services:

> In this age of fewer dollars, it's difficult for one county to support a special residential program for the deaf [client with alcohol problems], for example. However, when a consortium of counties cooperates and pools resources, it becomes quite feasible to create reality from our dreams (personal communication, September 20, 1988).

CDCD and the Bay Area Project

Inspired by Anderson's example, Jim Bouquin, director of the Disability Resource Center at Stanford University, organized an *ad hoc* volunteer task force in the San Francisco Bay area. Bouquin hoped to create a network of individuals and agencies that would document the need for appropriate treatment services for the disabled in the area and otherwise reinforce the perception that change was needed. The resulting northern California counterpart to the Disability Substance Abuse Task Force is known as the Coalition on Disability and Chemical Disability (CDCD).

With financial support from two local foundations and a county government, CDCD and a local independent living center undertook a year-long effort in three counties, known as the Bay Area Project on Disabilities and Chemical Dependency, to document the incidence and prevalence of alcohol and other drug problems among adults with disabilities within a metropolitan population of more than 2 million. During the spring and summer of 1988, the Bay Area Project survey of public-sector alcohol and other drug abuse service agencies received responses from 60 percent of the identified potential respondents; 54 percent of identified disability service agencies also responded to the survey. Among the survey findings reported by Cherry (1988) were the following:

- Of the survey area's estimated 62,927 individuals with disabilities who may have experienced a problem with alcohol or other drugs, only 334 (0.53 percent) were served by the responding agencies during the most recent reporting year.
- Sign language interpreters were available in only 13 percent of the responding alcohol and other drug service programs.
- Up to 50 percent of responding alcohol and other drug service programs prohibited use of one or more medications *required* for control of a physical disability.
- Among responding disability service agencies, only 17 percent conducted the equivalent of an in-depth assessment of alcohol and other drug use during the intake process.
- Only 15 percent of responding disability service agencies offered information on alcohol and other drug abuse to their clients.

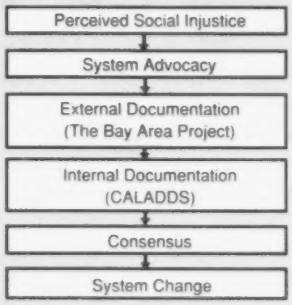
A second objective of the Bay Area Project was to provide technical assistance that encourages creative coordination, cross-training between professional staff from the alcohol and other drug fields and the disability professionals, and networking among alcohol, drug, and disability programs (CDCD 1988). In response to a need cited by many teachers of special education, the Bay Area Project also supported plans to develop targeted prevention materials for use with disabled young people who may be at high risk for developing alcohol and other drug dependencies.

The Bay Area Project culminated in a conference that included concurrent cross-training sessions, county caucuses to nurture the development of local advocacy initiatives, and workshops focusing on alcohol and other drug abuse prevention among young people with disabilities. Unexpectedly, the Bay Area Project also generated a tremendous outpouring of support and curiosity among professionals, clients, and government officials. Among those expressing an interest were people with so-called "hidden disabilities," such as epilepsy and milder forms of mobility and sensory impairment. A second year of funding now is being sought for projects derived from the Bay Area Project's final recommendations.

The California Alcohol, Drug, and Disability Study

The State of California recently charged a special permanent oversight commission to investigate criticism that the State Department of Alcohol and Drug Programs has not provided adequate services for the disabled. In 1987, the commission convened a public hearing for the purpose of ". . . determining if methods of enforcing the current Federal and State mandates for program access and non-discrimination are effective, identifying the size of the disabled, alcohol-abusing population, and determin-

Figure 1 **Process of Institutional Change Followed by Advocates for the Disabled Who Have Alcohol- and Other Drug-Related Problems**



ing if there are adequate methods of coordinating information and referrals to ensure the delivery of services" (N. Shappell, personal communication, May 1987).

In its report to the Governor (N. Shappell, personal communication, May 1987), the commission asserted that alcohol and other drug abuse among people with disabilities is more widespread than is commonly believed. Although the commission acknowledged that California has enacted ample legislation designed to ensure access to publicly funded programs and facilities by the disabled, the report indicated that neither the letter nor the spirit of these laws has been honored. As a result, the commission reported that there may be 500,000 disabled Californians with alcohol- or other drug-related impairment who are unable to obtain treatment.

Responding to these alleged deficiencies, the California Department of Alcohol and Drug Programs contracted with the Coalition on Disability and Chemical Dependency to undertake an assessment of treatment needs among Californians with disabilities. This 1-year project, the California Alcohol, Drug, and Disability Study (CALADDS), is a joint effort of experts from the fields of disability, alcohol and other drug service delivery, survey research methodology, and service delivery to hearing-impaired and developmentally disabled persons.

CALADDS focuses on accurately documenting architectural, attitudinal, and institutional barriers to recovery, primarily for individuals with mobility or sensory impairment. The researchers also are investigating and documenting the needs of the developmentally challenged and the mentally disabled with dual diagnoses. The study findings will be reported to the Department of Alcohol and Drug Programs during the summer of 1989. At this writing, it is expected that the final report will include recommendations to improve and expand alcohol and other drug treatment and prevention services statewide.

The core of the CALADDS needs assessment and documentation process is a series of key informant surveys of disability service programs throughout the State. Program directors have been asked to describe the alcohol and other drug problems of their clients, including difficulties experienced in interacting with alcohol and other drug abuse recovery services. A subset of agencies has been selected to administer a questionnaire directly to clients that will generate data about levels of alcohol and other drug use, experiences in accessing recovery programs, and the perceived relationship between alcohol and other drug use and the development of disability.

CALADDS also includes an unusual "street outreach" component that will attempt to determine the needs of homeless disabled individuals who experience alcohol or other drug problems. Fieldworkers operating in selected urban areas will conduct structured interviews with homeless disabled people to provide data useful for the design of specific approaches to serve this population.

The Process of Statewide Institutional Change

Jim Bouquin, founder and president of the CDCD, recently suggested a diagram that outlines the process followed by advocates of institutional change for disabled persons with alcohol and other drug problems (see Figure 1). In California, the process began with a few individuals who perceived inequity in access to recovery services. Organizing and collaborating to increase awareness and to educate professionals in alcohol and other drug abuse treatment resulted in a network of advocates within the service delivery system. To justify institutional change, however, policymakers needed concrete documentation of the scope of the problem and the potential need for services. Initially, advocates and philanthropies volunteered to provide resources for documentation. These resources generated the data that were used extensively in the findings of the State oversight commission. In response to these findings, the State Department of Alcohol and Drug Programs commissioned CALADDS, a study whose resources come from the public sector.

The next step, following "internal" documentation of needs by CALADDS, may be to develop consensus among advocates and policymakers on the nature of the changes that will improve access. It is hoped that this consensus will lead to implementation of system changes that will make the alcohol and other drug abuse service system accessible to individuals with disabilities. ■

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Alcohol-Related Morbidity Among the Disabled

The Medicare Experience 1985

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For a variety of reasons, alcohol-related problems among the physically impaired have been largely ignored. The problems of alcohol and other drug abuse among people with additional disabilities are often overlooked or ignored. The health care provider community may fail to recognize the signs of alcohol abuse or may look the other way.

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There have been few national data collection efforts regarding the number of alcohol-related hospitalizations among individuals with additional disabilities. This bulletin examines the alcohol-related morbidity for disabled Medicare enrollees for 1985. Two national data sets were used in this study: one to describe the alcohol-related hospitalization experience of the U.S. general population in 1985 and the other to describe, for the same year, the hospitalization experience of those individuals who are disabled Medicare enrollees.

THE NATIONAL HOSPITAL DISCHARGE SURVEY

The first data set is the National Hospital Discharge Survey (NHDS) of the National Center for Health Statistics (NCHS). Public use NHDS tapes for 1985 were used in this study. The NHDS randomly samples discharges from non-Federal hospitals with six or more beds and an average length of stay under 30 days (i.e., short-stay hospitals). The hospital sample is stratified by size and geographic region of the United States, and appropriate weights are provided to calculate national estimates (NCHS 1970).

Each record in the NHDS describes a hospital episode for an individual patient. The following items are provided for each hospitalization (or discharge):

- age, sex, race, marital status, and length of stay for the patient
- size and regional location of the hospital
- as many as seven diagnostic codes and four procedure codes describing the patient's diagnosis and treatment.

The NHDS allows space for coding from one to seven diagnostic categories on a discharge record. "First-listed" refers to the diagnostic category mentioned first on the record. This code is presumed to be the principal diagnosis—the main reason for the hospital admission. "All-listed" refers to diagnostic categories mentioned any place on the discharge record, with or without any all-listed set of diagnoses. It is important to keep in mind that the NHDS tabulates discharges rather than patients. For example, if 10 discharges are recorded for a given diagnosis, this record may reflect hospitalizations for 10 separate patients or one individual hospitalized for the same problem 10 times.

Medicare Provider Analysis and Review File

The Health Care Financing Administration's (HCFA) Medicare Provider Analysis and Review (MEDPAR) file is the source of the Medicare hospital inpatient data employed in this study. Information available in this file includes: age, sex, first-listed diagnosis and up to four additional diagnoses, length of stay, eligibility (aged or disabled), and reimbursement data. The data file used in this study is the 1985 MEDPAR file for the disabled. Disabled individuals who are listed in this file are those who meet the criteria for the Social Security Disability Insurance Program (Lubitz and Pine 1986). Although this data set in no way captures the entire population of disabled persons under 65 in the United States, it includes those so seriously disabled that they cannot work. One particular strength of the Medicare data set is that it is population based (rather than a sample). Also, although it resembles the NHDS in tabulating discharges rather than patients, another strength is that the Medicare data provide patient identifiers that can be used to account for multiple hospital episodes involving the same patient. In 1985, there were nearly 3 million disabled Medicare enrollees (HCFA 1988).

In general, NIAAA publications on the NHDS provide data on four age groups: 14–24 years, 25–44 years, 45–64 years, and 65 years and older. However, since over 70 percent of disabled Medicare enrollees are between 45 and 64 years of age (HCFA 1988), NHDS discharge rates for patients ages 45–64 were used in this study for comparison with the disabled MEDPAR hospital discharge records.

For the purposes of this study, the discharge records information was translated into categories based on the *International Classification of Diseases'* lists of alcohol-related disorders (CPHA 1978). The accompanying sidebar provides additional details on methods.

Diagnostic Categories Used in the Morbidity Study

For this study, detailed codes from the *International Classification of Diseases,* 9th Revision, *Clinical Modification* were recoded into one of the following major alcohol-related categories:

Alcoholic Psychoses
- alcohol withdrawal delirium [291.0]
- alcohol amnestic syndrome [291.1]
- other alcoholic dementia [291.2]
- alcohol withdrawal hallucinosis [291.3]
- idiosyncratic alcohol intoxication [291.4]
- alcoholic jealousy [291.5]
- other specified alcoholic psychosis [291.8]
- unspecified alcoholic psychosis [291.9]

Alcohol Dependence Syndrome
- acute alcoholic intoxication [303.0]
- other and unspecified alcohol dependence [303.9]
- alcoholic polyneuropathy [357.5]
- alcoholic cardiomyopathy [425.5]
- alcoholic gastritis [535.3]
- pellagra [265.2]

Chronic Liver Disease and Cirrhosis

Alcoholic Cirrhosis of the Liver
- alcoholic fatty liver [571.0]
- acute alcoholic hepatitis [571.1]
- alcoholic cirrhosis of liver [571.2]
- alcoholic liver damage, unspecified [571.3]

Cirrhosis, Other Specified Without Mention of Alcohol
- chronic hepatitis [571.4]
- biliary cirrhosis [571.6]
- other chronic non-alcoholic liver disease [571.8]
- portal hypertension [572.3]

Cirrhosis, Unspecified Without Mention of Alcohol
- cirrhosis of liver with mention of alcohol [571.5]
- unspecified chronic liver disease without mention of alcohol [571.9]

Nondependent Abuse of Alcohol
- alcohol abuse [305.0]

Results: A Doubling of Risk for Alcohol-Related Diagnoses Among the Disabled

According to the NHDS, in 1985 there were approximately 35.1 million discharges (excluding newborn infants) from short-stay hospitals. In nearly 600,000 (1.7 percent) of these, the principal or first-listed diagnosis was alcohol related. In order to take population differences into account, this type of information is more meaningfully expressed as rates. In 1985, the discharge rate for any diagnosis was 1,479 per 10,000 population age 14 and older

(NIAAA, in press). Table 1 lists discharge rates for several common, well-known conditions in order to provide a frame of reference for the discussion that follows.

Figure 1 illustrates that the alcohol-related discharge rates were dramatically higher for the disabled than for the general population as represented by the NHDS. For most alcohol-related diagnoses, discharge rates for the physically impaired sample are more than double those in the NHDS. The pattern of alcohol-related diagnoses among the disabled mirrors closely that of the population as a whole. The vast

Table 1 **Discharges from U.S. Short-Stay Hospitals, 1985**

First-Listed Diagnosis	Rates/10,000 Population
Any diagnosis	1478.9
Alcohol-related [1]	31.2
Females with deliveries [ICD–V27] [2]	314.8
Fractures, all sites [800–829]	47.6
Heart attack [acute myocardial infarction-410]	31.8
Gallstones [cholelithiasis-574]	20.0
Lung cancer [malignant neoplasm of trachea, bronchus, and lung-162, 197.0, 197.3]	13.3

[1] Rate per 10,000 population age 14 and older.
[2] Rate per 10,000 women.
SOURCE: National Center for Health Statistics, 1986.

Quick Facts

FROM NIAAA

For persons interested in up-to-date information on the scope and consequences of alcohol use and abuse, the National Institute on Alcohol Abuse and Alcoholism provides an electronic bulletin board system called *Quick Facts*. The system currently provides access to over 60 tables of data on alcohol consumption, drinking patterns, alcohol-related morbidity and mortality, other consequences of alcohol abuse, and utilization and costs of alcohol treatment. The information available through *Quick Facts* is updated periodically and the scope of coverage is constantly growing.

Quick Facts offers the following features:

- *No fee* for subscription or access;
- *Online availability* 21 hours each day (24 hours on weekends);
- *Accessibility*, by use of a modem with any computer terminal or microcomputer; and
- *Ease of use*, with online table of contents and index, help screens, and written user's manual available.

Use *Quick Facts* immediately by establishing the correct modem settings (8 data bits, 1 stop bit, no parity, full duplex or no local echo, and 2400 or 1200 or 300 baud transmission speed) and by calling 202-289-4112.

Quick Facts is a service of the Alcohol Epidemiologic Data System, a contract operated for NIAAA's Division of Biometry and Epidemiology by CSR, Incorporated. For more information about *Quick Facts* or for assistance when using the system, contact Fred Stinson at 202-842-7600.

Clearly, a significant amount of alcohol-related morbidity exists in the disabled community.

majority of first-listed alcohol-related diagnoses for both groups fell into the category of alcohol dependence syndrome followed by all cirrhosis.

The results of this study are striking. Clearly, a significant amount of alcohol-related morbidity exists in the disabled community. Previous research (Stinson and Williams 1986) has shown that first-listed diagnoses account for a little more than half of all the alcohol-related morbidity listed in the NHDS. Therefore, when only first-listed diagnoses are examined, alcohol-related morbidity in short-stay hospitals is underestimated substantially. This underestimation undoubtedly holds true for the MEDPAR data as well. Thus, the true magnitude of alcohol-related morbidity among the disabled is quite likely to be even more pronounced than reported in this study. ■

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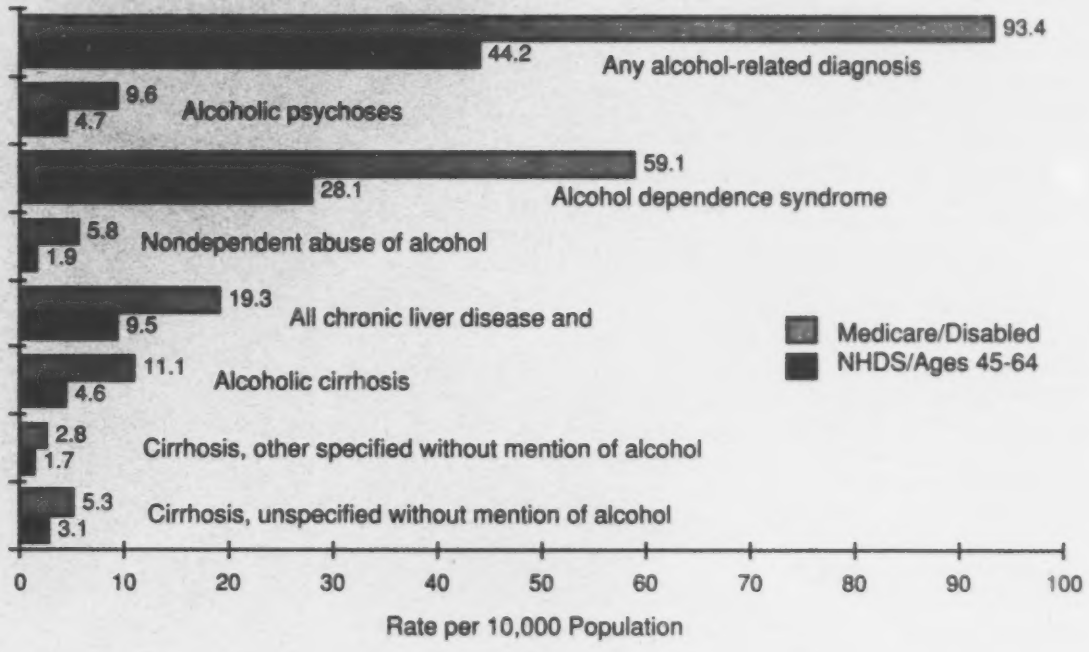
Figure 1 **First-Listed Alcohol-Related Discharges**
(NHDS Ages 45–64/Disabled Medicare)



READERS' EXCHANGE

HEARING-IMPAIRED ALCOHOLICS—AN UNDERSERVED COMMUNITY

In the United States, more than 20 million people suffer from impaired hearing (Wentzel 1986; U.S. Bureau of the Census 1987). How many of them have the dual problem of alcoholism and hearing loss? Exact data are not available; however, a conservative estimate, based on the National Council on Alcoholism's assumptions about the prevalence of alcoholism in the general population, suggests that at least 600,000 men and women experience this double burden.

Given the state of the art of alcoholism treatment services, how many hearing-impaired persons can expect to find help for their alcohol-related problems? Resources available to hearing people, from Alcoholics Anonymous (AA) to professional treatment facilities, are fraught with barriers for those who cannot hear. The resources depend on communication among individuals, communication between individuals and a group, or the "simple" act of listening to a film or talking on the telephone.

> Four years ago, my brother attended AA meetings many times a week for four months. . . . [He] didn't drink for four months but he didn't hear a word that was said in meetings. My brother went back to drinking and is still drinking. . . .
>
> [U]sing standard treatment methods [of a 28-day inpatient treatment program], I had to struggle with the group sessions in order to follow my fellow patients, and part of the strategy—the constant interaction with people from morning to bedtime—left me exhausted and frequently frustrated. . . .

What is the explanation for this lack of awareness and the relative absence of measures to meet the needs of hearing-impaired and deaf alcoholics? And how can these problems be corrected?

SOCIETAL RESPONSE TO HEARING IMPAIRMENT

Hearing impairment—the most common sensory limitation in the United States (U.S. Bureau of the Census 1987)—is a broad term embracing degrees of loss from mildly "hard of hearing" to profoundly deaf. The loss is measured in decibels (dB) that describe the ability of an individual to hear sound, as depicted in Table 1. The "profound loss" category includes persons who are deaf as well as some in whom residual hearing is retained. Deaf persons are those for whom the sense of hearing is nonfunctional for the ordinary purposes of life. Deafness refers to both the congenitally deaf and the adventitiously deaf—those in whom the sense of hearing has become nonfunctional through illness or accident.

A variety of organic and environmental factors may be involved in hearing loss. As a consequence, hearing impairment includes various combinations of middle-ear dysfunction, inner-ear dysfunction, bone dysfunction, and nerve damage. These conditions are expressed in the quantitative and qualitative differences in hearing loss and in the responses and equip-

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Gallaudet University Archives

Table 1 Standard Hearing Impairment Levels Expressed in Decibels

Decibels (dB)	Hearing Loss Category
10–26	Normal hearing
27–40	Mild loss
41–55	Moderate loss
56–70	Moderate severe loss
71–90	Severe loss
91–	Profound loss

SOURCE: Self Help for Hard of Hearing People, Inc.

ment required to address the loss or, when possible, to enhance and amplify sound. When the condition or the circumstances do not permit enhancement or amplification of sound, a hearing-impaired individual may attempt to rely on sign language, interpretation, or lipreading. Without these aids, a hearing-impaired person is consigned either to loneliness or to a ceaseless struggle to function in a world where verbal communication is the common method of social bonding.

A general assumption in the hearing and speaking world is that all hearing impairments other than profound deafness fit under the generic umbrella of "hard of hearing." All hard of hearing people often are perceived as similarly afflicted and similarly able to cope with the environment. In effect, hearing-impaired individuals are viewed as no different from those who hear.

> . . . I wear two hearing aids (only since I was 20 or so; I wouldn't do it as a kid for fear of embarrassment) but so many do not understand [that] they are just aids. They don't make us hear like other people. People expect that those of us using hearing aids should be able to hear like they do! It is so very frustrating and more so trying to explain . . . that I only hear better with them than I do without them and [that] I still miss a lot!

This inaccurate perception about the nature of hearing impairment may result in the failure to respond to the needs of hearing-impaired persons, compared with the responses offered to those whose disabilities are more readily observed and understood (Buss 1985).

On an individual level, insensitivity to the special needs of hearing-impaired persons may translate into a negative self-perception.

> . . . It really hurts when a friend gets angry at having to repeat something for the 100th time and rolls his head or his eyes upward; I hate seeing them get as frustrated as I am. . . .

Such experiences inadvertently may impart a sense of social stigma. Hearing-impaired persons may withdraw from the hearing world or deny the existence of a hearing loss. These behaviors at the least lay the groundwork for isolation, and it has been suggested that a high level of frustration may increase the incidence of alcohol abuse among the hearing-impaired population (Harris 1982).

The Role of Service Providers

Isolation and denial of an impairment are patterns familiar to the alcoholism treatment community. Treatment professionals recognize that these traits decrease the likelihood of identifying problems, minimize a client's acceptance of special needs, and reduce the probability of a positive treatment outcome. Alcoholism treatment service providers forge a critical link in the service delivery and recovery chain for the hearing-impaired alcoholic (Wentzel 1986).

Unfortunately, this role is not adopted effectively by many treatment service providers. Alcoholism service providers are not immune to inaccurate perceptions concerning hearing loss. The varieties and degrees of hearing impairment and the effect of a given loss upon an individual remain unexplored areas for most providers. When alcoholism treatment providers succeed in penetrating the barrier of self-protection raised by the hearing-impaired alcoholic, neither the alcoholism treatment service system nor the network of service delivery for the hearing impaired offers many resources designed to help intervention with the client. As a result, a hearing-impaired alcoholism client may fall through the gaps in a service delivery system (New Jersey Task Force 1986). According to one recovering author:

> . . . the biggest stumbling block to recovery hinged on something everyone missed: the real emotional acceptance of my hearing loss. Outwardly I handled my hearing loss in . . . a manner that did not give evidence to the profound deafness that I have. . . . I successfully hid behind this "mask" for 38 years. I now realize that my intense fight to be "normal" and my success in so doing was the real "denial" in my life. The professionals missed in not steering me towards the acceptance of my hearing loss and the limitations it places on me.

As for life after treatment—professionals must recognize how hearing loss isolates us from people, and people are the key to one's success in Alcoholics Anonymous (Jesberger 1988).

In 1984, the governing body of Union County, New Jersey, contracted for a survey on the appropriateness, availability, and accessibility of alcoholism and related treatment services for county residents with mental and physical disabilities. Through the end of data collection in June 1986, a total of 14 alcoholism treatment programs and 15 agencies serving the needs of hearing-impaired people were reviewed under the administration of the author. Virtually all of the general observations on the barriers to treatment were confirmed by the survey results. No treatment program or disability service agency in this relatively wealthy jurisdiction of more than a half million population was prepared to offer the resources necessary for treatment of hearing-impaired alcoholics.

Specialists who serve hearing-impaired people also face large gaps in information and resources related to the deaf alcoholic. The myth that hearing loss "explains" alcohol dependence is pervasive within the community of service providers for the hearing impaired, and such providers may fail to recognize alcohol-related problems among their clients. The same denial that a hearing person uses to mask alcoholism can be readily applied by a hearing-impaired person to mask a dual problem, especially if alcoholism and hearing loss are perceived as deviant social characteristics. In those rare cases in which a specialist on hearing loss identifies and attempts to meet the needs engendered by a dual problem, the specialist often may experience a sense of helplessness. Resources are difficult to obtain for someone who cannot hear in a group situation, who cannot use the telephone, or who cannot hear at all.

Correcting the Problem

Three types of activities must be undertaken to correct the absence of services for the hearing-impaired alcoholic. First, hearing-impaired people must continue to work as activists, exercising leadership in raising and maintaining social awareness of the issue of alcohol-related problems among their population. Second, society must respond to the dual disability of hearing impairment and alcoholism with the same caring concern directed toward other impaired populations. Finally, it is essential that service providers responsible for intervention among alcoholics and intervention among the hearing-impaired population move vigorously toward mutual education to spur the development of necessary services and resources.

Among human service providers and an increasing number of clinicians, it is a truism that recovery is most effective when the client becomes an active and knowledgeable partner in the treatment plan. Active participation recently was demonstrated when deaf students at Gallaudet University in Washington, DC, successfully protested the appointment of a hearing president and obtained the appointment of a qualified deaf president for the national university for the deaf. Society's response to the Gallaudet students' action was immediate. Television, radio, and newsprint provided thoughtful, comprehensive coverage during the week-long debate between students and the university board of trustees. As a result, many people became sensitized to the second class status that unwittingly may be ascribed to hearing-impaired people.

A less dramatic approach to self-help leadership among hearing-impaired persons is provided by Self Help for Hard of Hearing People, Inc. (SHHH), based in Bethesda, Maryland. According to founder and executive director Howard E. Stone, "SHHH was founded based on the conviction that little progress can be made until both those who can hear well and those who cannot better understand the nature, causes, complications, and possible remedies of hearing loss" (Stone 1987). Membership in such self-help groups may assist hearing-impaired persons to develop the confidence to insist upon a response to their needs.

> . . . The biggest problem I have now is that although I have this wonderful auditory trainer, people don't like to use it and it is very humiliating to ask/explain to the members of the AA group about it. . . . A few times I got rude remarks about the mike and blew up and told them I don't like it either . . . but I want to stay sober too. . . . They don't have to use it but just pass it to the next one who is willing to share with me.

Sensitivity to such problems is needed by communities that design and fund programs to serve people with alcohol-related problems. Several years ago, for example, the lack of community-based treatment resources was cited as a contributing factor to the suicide of a young hearing-impaired alcoholic. The attention focused by the incident enabled Paul Rothfeld, executive director of Cape Cod Alcoholism Intervention and Rehabilitation Unit, Inc., to found the Stephen Miller House in Pocasset, Massachusetts, as a memorial to this tragedy. Now funded by the State of Massachusetts, the Stephen Miller program focuses *jointly* on the problems of hearing impairment and alcoholism while offering information and counseling to the families of its clients and to the deaf community throughout the region (Rothfeld 1980).

The process of sensitizing communities to the needs of hearing-impaired alcoholics does not require the spark of tragedy. Alcoholism Intervention for the Disabled (AID) is a further example of social action in the design of a helping mechanism.

Founded by Alex Boros of Kent State University, AID now publishes a quarterly newsletter for national distribution. Topics covered in the newsletter include practical, state-of-the-art information for consumers and providers of alcoholism and other addiction services.

Although individuals and groups may work for change, the agencies and institutions responsible for serving people struggling with alcoholism and with hearing loss must acknowledge institutional needs for specialized, reciprocal education. Such education may include sensitivity training for both types of service providers. At a minimum, education must address the myths and biases that affect service delivery to hearing-impaired alcoholics.

In addition to education, alcoholism treatment services must develop awareness of the need to match special equipment and services to specific types of hearing loss. All hard-of-hearing or deaf people cannot be expected to benefit from the listening potential supplied by a given piece of equipment or communication technique. Louder, for example, is not necessarily better. Hearing aids help some individuals but not all. Personal hearing aids, even when effective for one-to-one communication, may require reinforcement by auxiliary equipment for use in groups, including AA meetings (Cutler 1985).

Treatment facility operations also may be affected by the requirements for effectively responding to hearing-impaired alcoholics. For example, background noise that merely distracts a client with normal hearing may totally distort a message directed to a client with assisted hearing. Visual cues that are essential to many lip-readers require good lighting. The availability of alerting devices is important for critical functioning or dangerous situations, particularly in inpatient treatment: Think of traveling to an unfamiliar location without the use of your ears! Service providers should view meeting such requirements as a prime determinant of successful program outcome for hearing-impaired alcoholics.

Above all, treatment service providers need understanding. People suffering from hearing loss are shut out from spoken language, our major means of communication. Language is a critical component of psychosocial development because of its role as a bearer of culture, a transmitter of information, and the primary means of presenting a self-image to the world. Spoken language conveys moods, needs, and many other shared experiences among people. When language acquisition is prevented by early, profound hearing loss or when communication is diminished by later onset of hearing impairment, hearing-impaired people are distanced and feel distance from their fellows (Harris 1982). Helen Keller's emphasis on her hearing loss over her blindness expressed the sense of distance when she said that blindness separated her from things but deafness separated her from people (Keller 1954). Some of this separation must be closed through understanding if alcoholism services are to provide genuine recovery for hearing-impaired people. ■

Quoted passages in this article are excerpted from letters received by the author in response to the publication of a recent article (Kearns 1987).

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Alcoholism and Bullous Changes of the Lungs

Some pulmonary patients are diagnosed with bullous changes of the lungs. This diagnosis refers to the presence of blisters, known as localized pneumatoceles or bullous formations. Textbooks describe the origin of the bullous changes as obstruction of the bronchioles, the narrowest portions of the bronchial tubes. According to this view, air can be trapped within obstructed bronchioles, resulting in the formation of blisters within the lung. The following alternative hypothesis to explain bullous changes of the lungs is based on many years of observation of chest x-rays of alcoholic patients, including over 100 cases in which a diagnosis of bullous changes was associated with alcohol dependence.

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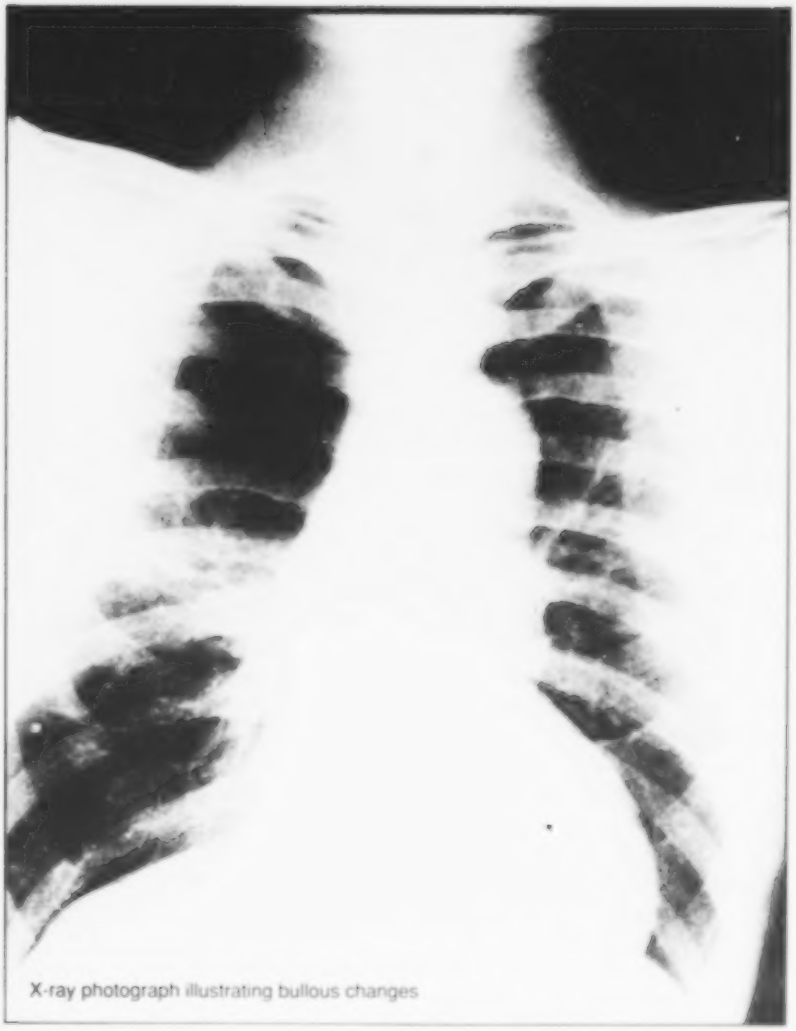


X-ray photograph illustrating bullous changes

It is hypothesized that many people have a physiological susceptibility to pulmonary effects of alcohol consumption. This population develops subclinical destruction of cells in the lung tissue, beginning in the upper lobes, in response to repeated consumption of large quantities of alcohol. Hypothetically, this destruction continues until the patient stops drinking alcoholic beverages. The end result of the cell destruction is upper lobes with varying degrees of bullous formations, ranging from a small lesion measuring several centimeters in diameter (as shown in Figure 1) to large areas characterized by fibrosis—the formation of abnormal fibrous tissue—and the absence of normal lung markings within the air sacs. Such permanent, irreversible changes can be observed in the lung tissue of alcoholic patients. These changes are not seen in chest examinations of smokers or nonsmokers without the complication of present or former alcohol abuse.

My observations suggest that the effects of destruction of the lung tissue may take one of two possible courses. Among some patients, no other significant changes in the lung occur unless complicated by infection or the presence of air or gas in the pleural cavity. These patients often present neither symptoms nor alteration in pulmonary function—the presence of bullous changes usually is discovered from routine chest x-rays taken for reasons other than breathing complaints. These patients can be described as Group I.

A second group of patients with bullous formations also present clinical symptoms of emphysema, along with the characteristic x-ray evidence of this well-known lung disease. I have found these Group II patients in large numbers in such institutions as Veterans Administration hospitals where care is provided for chronic lung disease. These Group II patients often are pulmonary "cripples" receiving treatment with alpha 1 anti-trypsin substitution.

The Group I patients frequently deny a history of alcohol consumption, but confirmation often is obtained from such other sources as relatives and friends. Through diligence and persistence in eliciting the history of alcohol use, over 90 percent of 100 observed cases of bullous formations confirmed the hypothesis.

Although these observations are intriguing and potentially significant, I believe that it will be very difficult to confirm them empirically. Most individuals who drink at problematic levels also smoke tobacco products; bullous changes resulting from smoking pose a potential barrier to analysis of the relationship between alcohol abuse and lung disorders. Further, unless alcohol-induced bullous changes can be separated from changes affected by tobacco use, specific mechanisms explaining the relationship between alcohol and these lung disorders will be difficult to establish. ■

Occupational Arena

Treating Patients with Alcohol-Related Trauma—A Report from the ARUS Symposium

A 28-year-old man comes in with basically normal vital signs, semiconscious and vomiting, some cuts about his scalp and around his ears. He is rather obnoxious, not a very pleasant character to be around, and smelling like a bottle of whiskey.

One of the residents says, "Oh, he is just drunk." And, indeed, he is drunk. But he also has a major intercranial clot. . . .

There has been an unfortunate tendency to get patients in the emergency room who are drunk . . . and to label them. . . .

If you are medically oriented, you may have heard them called "gomers."

What does gomer mean?

It means "get out of my emergency room."

—Carl Soderstrom, M.D.[1]

Each year more than 140,000 Americans die from trauma, and 1 in 3 incurs an injury that requires medical attention or produces temporary disability (Committee on Trauma Research 1985). Trauma is ranked as the country's fourth leading cause of death and the leading cause of physician contacts (Rockett and Putnam 1986).

Victims of serious trauma find medical help in over 5,000 hospital emergency departments and 300 trauma centers throughout the United States. It has been estimated that 20 to 37 percent of admissions to these acute care facilities involve excessive alcohol use (Roizen 1985). According to Julian Waller, M.D., of the University of Vermont's Department of Medicine, contacts between acute care physicians and victims of alcohol-related trauma "offer a unique window of opportunity . . . if the physician helps the patient confront the [alcohol] problem when the patient is no longer under the influence . . . but is still hurting from injuries caused by the alcohol abuse." Conversely, failure to identify and intervene with an underlying alcohol disorder could result in medical mismanagement of the injury, subsequent injuries resulting from untreated alcohol abuse, or both.

Problems that physicians encounter when addressing a patient's injury and an underlying alcohol disorder were examined by participants in NIAAA's Alcohol Research Utilization System (ARUS) symposium "Post-Injury Treatment of Patients with Alcohol-Related Trauma," held in June 1988 in Washington, DC.[2] Clinicians and researchers who attended the ARUS workshop reviewed research on alcohol-related injuries and identified promising avenues for future study. Participants also suggested ways to exploit what Douglas Rund, M.D., chief of emergency medicine at Ohio State University Hospital, termed "that brief moment of care in the trauma event . . . when the alcoholic trauma victim will accept treatment for alcoholism" (personal communication, Fulton Caldwell, Ph.D., NIAAA, January 1989).

Chaired by Albert Lowenfels, M.D., professor of surgery at New York Medical College at Valhalla, the 1-day workshop featured plenary sessions on diagnosis of alcohol dependence in injured patients; early management of patients with alcohol-related injuries; alcohol-induced physiological alterations in trauma victims; and intervention and followup for alcoholic patients. Obstacles that emergency physicians encounter at each stage of patient care were highlighted.

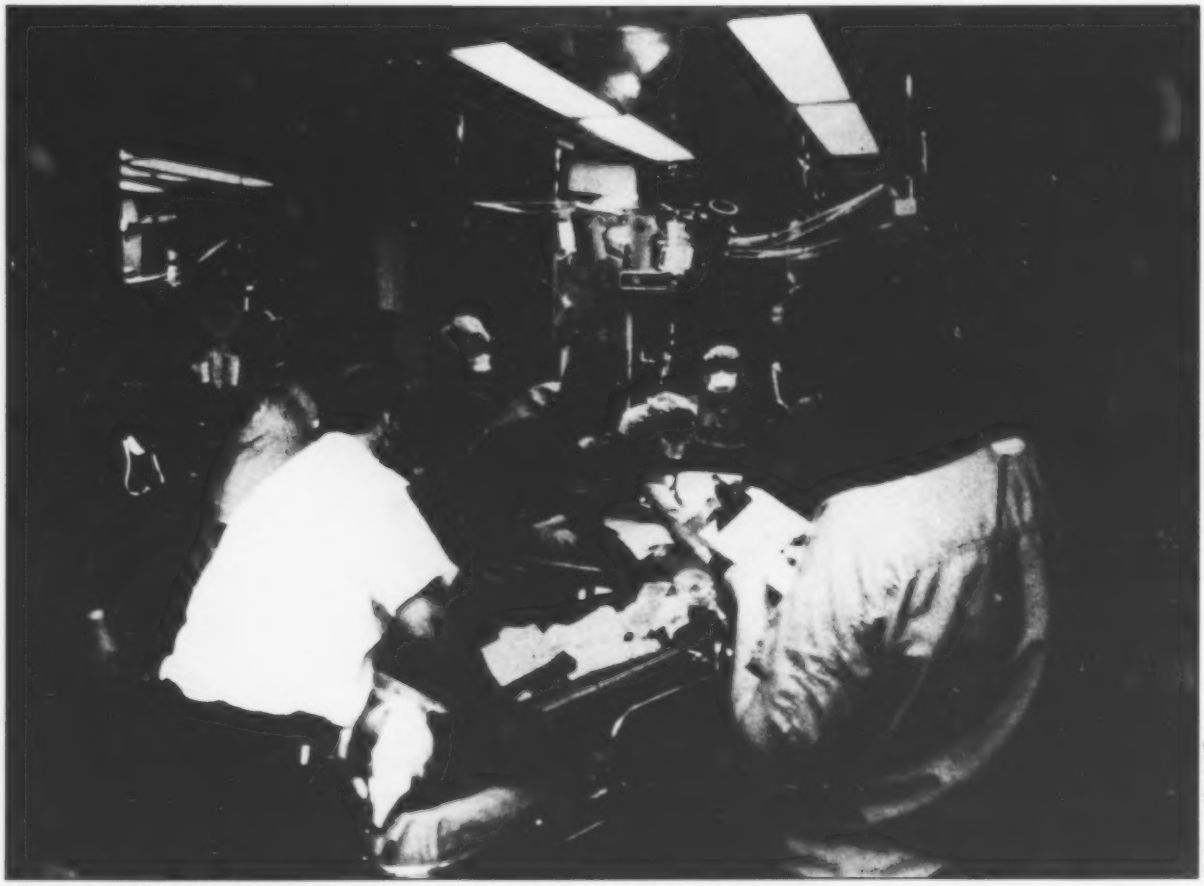
Recognizing Alcohol Dependence

The World Health Organization's *International Classification of Diseases, 9th Revision* (ICD–9) describes the outward manifestations of nondependent alcohol abuse as frequent, excessive drinking sufficient to adversely affect one's health or social functioning (WHO 1977). The American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised* (DSM–III–R) describes alcohol abuse as an inability to stop drinking until poor health or depleted financial resources prevents further drinking (APA 1987).

At least until its late stages,

[1] *The source of quoted material in this article is the transcript of the June 1988 Alcohol Research Utilization System symposium "Post-Injury Treatment of Patients with Alcohol-Related Trauma." A synopsis of the transcript is available from the National Clearinghouse for Alcohol and Drug Information, P.O. Box 2345, Rockville, Maryland 20857. Also available from the clearinghouse is "Alcohol and Trauma," the January 1989 issue of* Alcohol Alert, *a bulletin for clinicians and allied health professionals.*

[2] *The ARUS series, initiated in 1980, is a forum for the assessment of knowledge and a limited number of high priority research findings in a specific area of alcohol study.*



Washington Hospital Center

It has been estimated that 20 to 30 percent of admissions to acute care facilities involve excessive alcohol use.

alcohol dependence is identified primarily by these same manifestations. DSM-III-R notes "marked . . . impairment in social and occupational functioning" (p. 172) in alcohol dependent persons. ICD-9 describes alcohol dependence syndrome as "characterized by behavioral and other responses" (p. 198). Because few of these responses are observable in clinical settings, the diagnosis of alcohol dependence often relies largely on patient self-report of medical, social, or financial problems related to alcohol use and on a diagnostician's interpretation of that patient's self-report.

Instruments that are used for screening alcoholic patients also rely heavily on patient self-reports, an assessment mechanism that has been challenged (Watson et al. 1984; Fuller et al. 1988). In addition, according to Kathryn Magruder-Habib, of the Veterans Administration Medical Center and Duke University, most screening instruments are long, cumbersome, and poorly suited to administration in an acute care setting.

Trauma physicians suspect alcohol dependence largely on the basis of what they see, which, in an acute care setting, is less often the adverse effect of alcohol on social or occupational functioning than the more obvious evidence of intoxication. However, signs of recent alcohol use do not justify a diagnosis of dependence; in fact, alcoholics with well-developed tolerance often show no outward manifestations of recent alcohol use.

Correct identification of alcohol dependence is further complicated because visible signs of intoxication may mimic signs of other conditions. For example, patients who are unconscious or display altered consciousness as a result of head injury sometimes are misdiagnosed as under the influence of alcohol. Similarly, patients with altered consciousness brought on by alcohol abuse may be misdiagnosed as victims of head injury. The "gomer" referred to by Soderstrom, of the Maryland Institute for Emergency Medical Service Systems (MIEMSS), is one example of misdiagnosis.

"Unless you actively seek out the disease," urged Waller, "you will miss all except those individuals with the most flagrant, late-stage disease patterns. . . . and the only way to know how much a person has been drinking is to do a quantitative test for the drug."

Measuring Alcohol Use

The quantitative test most frequently employed is that for blood alcohol concentration (BAC), sometimes measured for legal reasons at the scene of a highway accident, but routinely measured in only about 50 percent of trauma centers, according to Soderstrom.

As Waller pointed out, the legally defined measure of intoxication actually captures only 18 percent of intoxicated drivers. For this reason, some States are taking action to redefine the current measure of .10 milligrams of alcohol per deciliter of blood as evidence of intoxication.

Measured in hospital emergency departments and trauma centers, the BAC has significant limitations as an indicator of possible alcohol dependence. According to Waller, a relatively low BAC may prevent identification of elderly alcoholics, whose typical alcohol consumption is only four drinks a day. On the other hand, high BACs are common among teenaged alcohol abusers, who usually have not consumed sufficient quantities of alcohol over a long enough time to be alcohol dependent.

Given the limitations of current testing options, how do emergency care physicians diagnose alcohol dependence?

However, the BAC does provide a physician with information about the amount of alcohol in a patient's system at the time of admission—information that can prove essential in determining a course of treatment. Citing a similar recommendation by the U.S. College of Surgeons, symposium moderator Lowenfels called on conference attendees to recommend routine use of the BAC in all trauma centers and emergency departments.

Laboratory tests that may alert trauma physicians to excessive alcohol use and to possible dependence in their patients include elevated liver function tests without obvious explanation, elevated triglycerides with relatively low cholesterol, and elevated blood glucose without a family history of diabetes or, conversely, low blood sugar or reactive hypoglycemia. None of these measures is routinely applied to all trauma victims, and none independently is indicative of more than a possible alcohol-related problem.

Given the limitations of current testing options, how do emergency care physicians diagnose alcohol dependence? According to Waller and to discussant Peter Fielding, M.D., of St. Mary's Hospital and Yale University, the question is not diagnosis but "screening and yield." "The job of a physician who is not a specialist in this area is to know when and how to do appropriate screening and to get the patient into the hands of the necessary alcohol specialist," said Waller.

Waller suggested a BAC of .15 without clinical evidence of intoxication as indicative of high patient risk of alcohol dependence. He also recommended several short screening instruments,[1] of which the most recently developed consists of only two questions. Cyr and Wartman (1988) reported that a positive answer to the question "Have you ever had a drinking problem?" was predictive for 70 percent of persons with alcohol-related problems. Accuracy was raised to over 90 percent for persons who, when asked, "When was your last drink?" answered that they had consumed alcohol within the past 24 hours. As Waller noted, a positive BAC obviates the need to ask the second question.

Although Fielding and Waller concluded that patients who test positive in alcohol screenings should be referred to alcohol specialists, the reality is that acute care physicians give priority to treating the immediate trauma rather than to its underlying cause.

[1] *Other short screening mechanisms considered appropriate for use in an acute care setting are the Knupfer method (1984) and the CAGE method (Ewing 1984).*

Managing Alcohol-Related Trauma

The results of both laboratory tests and patient self-reports are critical not only for identifying an underlying alcohol-related disorder but also for treating those presenting with injuries, according to Soderstrom, who discussed early patient management, and Paul Woolf, M.D., of the University of Rochester Medical Center, who discussed physiological alterations that may result from alcohol use or abuse.

In addition to the possible confusion of head injury with intoxication, Soderstrom noted the difficulty with identifying intra-abdominal injury. "To us," he said, "if a patient appears to be intoxicated, that is a reason to do a peritoneal lavage . . . [irrigation of the abdomen] or a CT [computerized tomography] scan to look for internal injuries. Patients who seem to be a little drunk may have no signs or symptoms pointing to internal injuries. Some of those patients may go into shock hours later because of a fractured spleen or a cracked liver."

Soderstrom also noted problems of thrombocytopenia (a decrease in the number of blood platelets) in patients who have abused alcohol on an acute basis. With the cessation of alcohol use on admission, a rebound thrombocytosis (an unusually high platelet count) may occur about 1 week after admission. Because both conditions may produce surgical complications, it is important to monitor diligently a patient's vital signs, cardiac function, and serum electrolyte levels during operative and postoperative care. Complete blood counts (with platelet determinations) and coagulation studies also should be a regular part of patient care.

However, the most common surgical complication among patients who are intoxicated precedes actual surgery, according to John Stene, M.D., Ph.D. Stene, an anesthesiologist who works with Soderstrom at MIEMSS, reminded symposium attendees that alcohol potentiates anesthesia, so that when a patient is intoxicated, the level of anesthesia should be reduced. Alcoholics who are not intoxicated, on the other hand, require much higher levels of anesthesia. Stene also called attention to problems resulting from the interaction of alcohol with other drugs. He cautioned that most toxicology tests are crude and fail to detect all drugs of abuse.

Other common difficulties with treating alcoholics include cardiac and immune defense system problems, hypothermia, and, of course, withdrawal, Soderstrom said. Delirium tremens (DTs), the most critical form of alcohol withdrawal, has a mortality rate of 40 percent if left untreated. Soderstrom described the need for emergency rooms and trauma centers to make use of "up front" indicators of persons at risk and defined the presence of any two of three indicators as predictive of the need to prophylax against DTs: history of DTs or prior withdrawal syndrome, liver cirrhosis, and recent heavy drinking.

The problems encountered by physicians in dealing with patients who have used or abused alcohol have heightened the interest of researchers in physiological alterations resulting from various levels of alcohol consumption. Woolf, who addressed the ARUS meeting on alcohol's possible effects on neuronal injury, suggested the use of circulating hormones, or neurohumoral markers, to predict outcome in brain-injured patients. To explore this and other areas of metabolic research, discussant David Lewis Davies, Ph.D., of the University of Arkansas, stressed the need for clinicians to coordinate their research with that of basic scientists. Davies raised as an issue for further exploration the possibility that alcoholics are in some way at greater risk for incurring trauma: "Is there some sort of metabolic dysfunction that predisposes them to higher susceptibility?" he asked.

Whether or not alcoholics are at greater physiological risk for incurring trauma, they are at risk for greater severity of injury, symposium presenters agreed. According to Soderstrom, research findings have disputed the widely held perception that persons who are intoxicated—and therefore relaxed—are better protected against serious injury at the time of an accident (Waller 1987; Roizen 1985). Waller also stressed that persons with high BACs are more likely to be alcoholics and more likely to die at the scene of an accident than those with low BACs, a pattern he noted to be consistent across all types of injury. "Our concern, however, is not with identifying alcoholism per se," Waller added, "but with identifying it among those who will live and, therefore, who can benefit from such identification and intervention."

Intervening with Injured Alcoholics

"Every trauma expert must be an interventionist," stated Max Schneider, M.D., past president of the American Medical Society on Alco-

holism and Other Drug Dependencies. Schneider, who presented a paper entitled "Intervention and Followup of the Alcoholic Trauma Patient," lamented, ". . . because it is really a stigmatic disease . . . we get the feeling [diagnosis of alcohol dependence] is more an accusation. . . . we become enablers."

Reporting on the medical student education program at the University of California-Irvine, Schneider added that 30 percent of the junior and senior medical students are adult children of alcoholics. (This figure conforms with an earlier estimate by Waller that one-fifth to one-third of all U.S. physicians come from alcoholic families.) In either their junior or senior years, the California medical students work closely with the addiction education program, after which 3 percent enter treatment and 12 percent request assistance for interventions with family members. Efforts of this sort, claimed Schneider, may help overcome reluctance to screen and refer alcoholic patients to treatment.

Schneider reviewed four types of intervention, including "self-intervention," which occurs only rarely when an injured patient suddenly realizes that a mood-altering drug such as alcohol has contributed to the traumatic event. Although initiated by the patient, self-intervention requires the medical team to stand ready to direct the alcoholic to appropriate therapy.

The three other forms of intervention may be initiated productively by acute care physicians. One-on-one intervention by a physician, nurse, or counselor may be performed in the emergency room with both ambulatory clients and persons admitted to the inpatient unit, Schneider said. The interventionist should furnish discharged patients with specific diagnostic information, such as the written comment, "Your BAC was [.15], indicating the likely presence of a treatable disease." Discussion of the diagnosis may be held with the patient's family, and an appointment may be made for the patient's return. On the return visit, the patient is counseled to the point of referral to an alcoholism treatment program.

Intervention patterned after the Johnson Institute model (Johnson 1986) also may be performed in an acute care setting. The Johnson model convenes family members and others significant to the alcoholic and results in a specific plan for alcoholism treatment. Schneider cautioned that even in the busy environment of a trauma center or emergency department, the intervention must be conducted privately.

For patients with whom earlier intervention and prior alcoholism treatment have failed, reintervention is necessary, Schneider said. "This is a chronic disease with exacerbations and remissions," he noted. "The seeds are sown [by intervention] and may take weeks or months or years to grow."

Schneider emphasized that all personnel in emergency departments and trauma centers should be knowledgeable about the processes for intervention. Physicians, counselors, nurses, clergy members, and social workers ". . . should be aware that there is something that not only can be done, but must be done," he said. Citing a program at Brown University, Schneider recommended a team approach. Brown's "A-Team" consists of nurses and counselors who circulate throughout all departments of the hospital, alerted to patients with possible diagnoses of alcohol dependence. The A-Team, which includes recovering alcoholics, actually conducts the interventions. Nevertheless, Schneider concluded, "It is the physician in the trauma center, the physician in the emergency department, who must take the leadership and, historically, we have been reluctant to do so."

Updating Knowledge and Attitudes

The relationship between physician attitudes and patient care was a recurrent theme throughout the ARUS workshop. In his opening presentation on diagnosis of alcoholism, Waller claimed that diagnoses are often overlooked or even actively avoided because physicians feel a ". . . sense of frustration and futility about the disease. They do not know what resources are available . . . and they erroneously believe that little can be done for the alcoholic. . . ." Waller attributed some of the deficits in physician knowledge and attitudes to alcohol-related problems in the physicians' own families.

Discussant Magruder-Habib suggested that many physicians remain unconvinced that alcoholism is a disease at all, a position that removes their responsibility to treat it: "The patient does not want to admit that he or she is alcoholic. It is a wonderful collusion. Nobody needs to address the problem and everybody comes out okay—except, of course, in the long run."

Referring to recent studies of physician attitudes (see, for example, Soderstrom 1987; Lowenfels et al. 1989), Fielding speculated that self-declared attitudes may vary substantially from actual behavior.

"In many senses," Fielding said, "the physician is in the same category as the patient, a victim of something . . . we do not understand."

Magruder-Habib called attention to a study in progress that examines the behavior of physicians who are supplied with screening results indicative of likely alcoholism in their patients.[4] This blind study is expected to examine physician attitudes and behaviors in a manner that removes the possible bias of physician self-reports.

Even when physicians are knowledgeable about alcoholism and its treatment . . . competing priorities force them to make difficult choices.

Even when physicians are knowledgeable about alcoholism and its treatment and have positive attitudes toward alcoholic patients, competing priorities force them to make difficult choices. According to one symposium participant, when a diagnosis of alcoholism is incorrect, malpractice litigation presents a formidable threat. When a BAC test reveals substantial alcohol involvement, medical treatment may be complicated by legal procedures. And when injuries are reported as alcohol related, insurers may refuse to reimburse for medical care. Considerations of this sort confound the decisionmaking of even the best intentioned emergency physicians.

"What are the real solutions?" asked Fielding. "We have to identify where the fixed points are . . . go to the hospital governing bodies, the medical executive committees, and ask them to draw up departmental guidelines, remembering that physicians may be criticized if they do not identify patients at risk. . . . Having identified patients with significant blood alcohol levels . . . they need to allow the lay counseling services, the paramedics, to have the blood alcohol results on a daily basis so they can get involved with the physicians and take that information to the bedside. . . . I think we ought to be requesting that this . . . topic come into the quality assessment of all institutions. Then we can get on with education for patients, physicians, legislators, and the media." Other practical solutions offered by ARUS symposium participants included efforts to inform the insurance industry of the clinical significance of alcohol testing and improved networking between acute care personnel and community alcohol treatment resources.

In addition to expanding and refining basic, biomedical, and epidemiological investigations, symposium participants recommended continued analysis of physician attitudes, with particular attention to the specialties of surgery and internal medicine. Urging further research on physician attitudes, Waller asserted, "The payoff will be not just better treatment for our patients, but better living of our own lives."

—*Ann M. Bradley*

[4] *Kathryn Magruder-Habib, Ph.D., may be contacted concerning the study in progress at the Veterans Administration Medical Center, Psychiatry Service, 508 Fulton Street, Suite 116-A, Durham, North Carolina 27705.*

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International Perspectives

Alcohol-Related Trauma in Mexico

The presumed relationship between alcohol and trauma is an important public health topic in Latin America because trauma is a major cause of male mortality among several countries of the region. In Mexico, for example, "accidents, poisonings, and injuries" are the most frequent causes of mortality among men aged 15 to 44 years (Rosovsky and Garcia 1988). Until recently, however, data documenting the relationship between alcohol and trauma in Latin America have been scarce (Medina-Mora and Gonzales 1988).

During the last five years, Mexican researchers have made rapid progress in collecting these data. Led by staff members of the Department of Epidemiologic and Social Research of the Mexican Institute of Psychiatry, research on alcohol and trauma in Mexico has advanced from field tests of data collection techniques to international collaboration that compares alcohol involvement in trauma in Mexico City to findings obtained from California emergency rooms.

Use of State Attorney Records on Alcohol and Trauma

According to Haydee Rosovsky of the Mexican Institute of Psychiatry (1988), the earliest source of Mexican data on alcohol involvement in trauma is the records of the State Attorney in the Federal District of Mexico—a jurisdiction similar to the District of Columbia in the United States. The State Attorney maintains field offices in emergency hospitals (*hospitales de urgencias*) of the Federal District's Medical Services, where a resident doctor documents the physical condition of patients who may eventually become involved in criminal prosecutions or accident investigations. The physicians conduct clinical examinations of these subjects, similar to examinations performed at police stations. The examinations include determining alcohol involvement in the patient's injury or illness. The office of the State Attorney thus records probable alcohol involvement in many emergency room cases—but the documentation is limited by the lack of laboratory tests that provide objective measurement of blood alcohol concentration (BAC) (Rosovsky 1988).

In 1985, a research team from the Mexican Institute of Psychiatry attempted to use the records of four emergency hospitals to document the scope of alcohol-related trauma experienced in Mexico City (Mas Condes et al. 1986). The data suggested that approximately 12 percent of all cases admitted to those hospitals in 1983 and 1984 resulted from accidents occurring under the influence of alcohol. The case records also indicated that approximately 5,000 victims of intentional violence annually were admitted to the four hospitals under the influence of alcohol. These victims effectively increased the alcohol-related case load of the emergency hospitals to more than one-sixth of all admissions during 1984.

Improving Data Collection on Alcohol-Related Trauma

The epidemiologists of the Mexican Institute of Psychiatry recognized the limitations of relying on data from the office of the State Attorney to investigate the relationship of alcohol and trauma. Their initial efforts to improve data collection and analysis focused on the following objectives (Rosovsky 1988):

- to describe existing means of documenting the role that alcohol consumption plays in accidents and crimes brought to the attention of medical and law enforcement authorities
- to develop and test a methodology to improve evaluation of the importance of alcohol consumption in these cases
- to collect and analyze data on sociodemographic characteristics, drinking patterns, and previous alcohol-related problems of the population involved in these cases.

The last of these three objectives was the topic of a study performed at the Xoco Emergency Hospital by staff members of the Mexican Institute of Psychiatry in late 1985 (Rosovsky and Lopez 1986). For a full month, they interviewed every patient who came to the attention of the onsite office of the State Attorney because of probable alcohol involvement in the presenting injury. The interviews yielded a wealth of information on patterns of consumption, history of alcohol-related problems, and specific drinking events prior to injury, as reported by the patients. The researchers noted that most individuals in the sample were young men admitted as a result of injuries sustained in fighting and that the typical pattern of alcohol consumption reported among those interviewed following fights was occasional binge drinking rather than more frequent consumption.

Rosovsky and Lopez (1986) expressed concern that dependence on physician observation to determine alcohol involvement was not suffic-

ient to identify all trauma victims whose injuries followed alcohol consumption. In their study, they reported that under present conditions, a considerable proportion of the admissions to an emergency hospital and to a police station was not examined by the physician to assess the presence of alcohol: Only 61 percent of all patients at the emergency room and 39 percent at the police station were examined, and the report of alcohol consumption in those cases was 7 percent at the hospital and 15 percent at the police station. Simultaneously, the researchers interviewed all persons and the proportion that reported alcohol consumption prior to the event was much higher: 18.5 percent at the hospital and 39 percent at the police station.

In 1986, the Mexican Institute of Psychiatry took a major step forward in data collection efforts on alcohol and trauma by selecting patients for study independent of the official process of case identification by representatives of the justice system. At eight hospital emergency rooms in Mexico City, investigators from the Institute selected subjects for breath sampling and interviews at random from among all patients 15 years of age and older admitted during a single week. Breath samples were taken immediately after admission to obtain BAC measurement as close in time as possible to the occurrence of the presenting trauma. In October 1987, similar data collection was performed on *all* patients 15 years of age and older admitted to three hospital emergency wards in the port city of Acapulco over the course of the entire month. A significant component of these data collection efforts was adoption of a model for emergency room data collection instituted by Cheryl J. Stephens Cherpitel, Dr.P.H., of the NIAAA-sponsored Alcohol Research Group at Berkeley, California (Rosovsky and Garcia 1988). The original English language interview guide developed by Cherpitel was translated into Spanish for use in Mexico, and the model's study design and analytic definitions have been incorporated in the protocols of the Mexican Institute of Psychiatry's research (Cherpitel and Rosovsky 1988).

Collaboration Leading to Cross-National Comparison

Adoption of the standardized Cherpitel model and its associated data collection techniques by researchers in several countries, including Mexico, will permit cross-national comparison of alcohol consumption variables among emergency room populations, using parallel methods and data collection instruments. Some of the first fruits of this collaboration were presented by Cherpitel, of the Alcohol Research Group at Berkeley, and Rosovsky, of the Mexican Institute of Psychiatry, at the annual meeting of the American Public Health Association (1988). The presentation featured findings from parallel data collection efforts at emergency rooms in Mexico City and Contra Costa County, California. The collaborative effort was funded in part by NIAAA's International and Intergovernmental Affairs Program.

Cherpitel and Rosovsky (1988) reported significant comparative findings on the characteristics of the trauma victims in the two countries. Some of these differences were gender specific:

- In the Mexican hospitals, the ratio of all injured male patients to injured female patients reporting alcohol consumption within 6 hours prior to the injury was nearly 5:1. In contrast, among the Contra Costa sample, the ratio of injured males to females reporting alcohol consumption within 6 hours prior to the injury was less than 2:1 (p. 29).
- While female emergency room patients in California were more than twice as likely as their Mexican counterparts to test positive on the breathalyzer (p. 28), among male emergency room patients, the injured in Mexico were more than twice as likely as those injured in California to test positive.

Other cross-national differences were identified in patient self-reports of the normal frequency of alcohol consumption among trauma victims—significantly larger proportions of abstainers and infrequent drinkers were found among the Mexican sample than among the Contra Costa sample (Cherpitel and Rosovsky 1988, p. 12).

The collaboration between the Alcohol Research Group at Berkeley, the Mexican Institute of Psychiatry, and investigators in other countries, often aided by NIAAA, will contribute to further refinement of investigative techniques. These techniques, in turn, yield increasingly accurate data on the extent of alcohol-related public health problems throughout the world.

Special Populations

Correspondence on alcohol epidemiology activities of the Mexican Institute of Psychiatry may be addressed to Haydee Rosovsky, M.P.H., Division de Investigaciones Epidemiologicas y Sociales, Instituto Mexicano de Psiquiatria, Antiguo Camino a Xochimilco No. 1010, Huipulco, Mexico 22 D.F., Mexico.

—*Michael J. Stoil, Ph.D.*

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NIAAA Support for Studies on Hispanic-Americans

Americans of Hispanic origin constitute the fastest growing ethnic group in the United States. Numbering over 14 million in 1980, the Hispanic population will surpass the black American population during the 1990's, according to some estimates.

Despite the growing numerical importance of Hispanics, little is known about patterns of alcohol use, abuse, and dependence among the Spanish-speaking communities. There is consensus that Hispanic-Americans are underserved by treatment and prevention efforts, in part due to culturally based barriers within the Hispanic community. The absence of epidemiological data on the extent and consequences of alcohol-related problems among Hispanic-Americans also contributes to difficulties in providing appropriate services.

Among its other functions, NIAAA's Division of Biometry and Epidemiology (DBE) directs the extramural research program in alcohol epidemiology for the Institute. "Extramural" research consists of studies performed by investigators from universities and other research institutions outside of the Federal Government. DBE-awarded grants on drinking patterns in Hispanic-American communities respond to the imperative to increase knowledge of alcohol-related public health issues. DBE is sponsoring four investigations of Hispanic alcohol use, which comprise 10 percent of the Division's active grants.

Explaining the importance of this research, DBE program officer David Sanchez suggests that analysis of the effects of acculturation and assimilation on Hispanic drinking behavior may have application to understanding changing alcohol use patterns of many immigrant groups. Additionally, Sanchez notes that the stressful transition from village life to the complexity of large cities, experienced by many adult Hispanics, also may affect alcohol use.

The role of alcoholism as a coping mechanism to reduce stress is an explicit focus of the work of James Neff, Ph.D., and colleagues in the Department of Psychology of the University of Texas Health Science Center at San Antonio. The DBE-supported research employs prospective methodology to compare drinking patterns and motivations for drinking among adult Mexican-Americans, blacks, and non-Hispanic whites. A major issue in the study is the differentiation of the effects of socioeconomic status and subculture on the use of alcohol to relieve psychological and emotional stress. In effect, the study seeks to respond to such questions as whether specific drinking patterns, including weekend "binges," are influenced more by ethnic variables or by the shared values of coworkers.

Interpretation of the findings of the Neff study may benefit from a second DBE-supported analysis on patterns of alcohol use among Mexican-Americans, conducted by M. Audrey Burnam of the Rand Corporation in Santa Monica, California. Burnam is using an existing data base (Hispanic Health and Nutrition Examination Survey) that includes alcohol consumption patterns of Hispanic-Americans (Christian et al. in press). An addi-

NIAAA Archives

tional source of comparison may be an earlier NIAAA-supported study of drinking patterns among Mexican-Americans conducted by the Alcohol Research Center at Berkeley, California (see Caetano 1986–1987).

Variable definitions used in the Berkeley study have been adopted by Gerald Gurin, Ph.D., and colleagues at the Hispanic Research Center of Fordham University in a survey of drinking behavior, norms, and problems among Puerto Rican adults in the New York metropolitan area. This DBE-supported study, performed with the help of Temple University's Institute of Survey Research, is designed to produce basic epidemiological data on Puerto Ricans comparable to that generated by previous surveys of Mexican-Americans, blacks, and non-Hispanic whites. In addition, Gurin proposes that the study findings will enable analysts to test a theoretical model that relates changes in the drinking patterns of Puerto Ricans on the U.S. mainland to general cultural effects of migration and acculturation.

A more intensive methodology employing a community sampling procedure to select Puerto Rican men for structured interviews characterizes the work of Merrill Singer, Ph.D., and colleagues in DBE-sponsored research at the University of Connecticut at Hartford. In addition to basic epidemiological information, the Singer study will attempt to identify the "natural history" of drinking among Puerto Rican men, including family drinking histories, beverage preferences, and changes in quantity and frequency of consumption over time.

Sanchez believes that the recent increase in interest in Hispanic alcohol patterns, coupled with expected increases in budget allocations for DBE extramural research, may accelerate the pace of new findings in this area of alcohol epidemiology. One potential topic for new research is the identification of patterns within the Hispanic communities, including differences in alcohol-related behavior among Central American, South American, Mexican, and Cuban immigrants, and descendants of the long-established Hispanic communities of the southwestern United States. Because the homelands of these distinct Hispanic communities are associated with characteristic national patterns of alcohol use, documentation of differences in current use patterns may provide important information on the process through which Americans in general become socialized to consumption of alcoholic beverages.

Information on future opportunities for DBE grant-supported investigations of Hispanic-American alcohol epidemiology, including the required application packages, may be obtained by contacting David Sanchez at the National Institute on Alcohol Abuse and Alcoholism, Room 14C–26, 5600 Fishers Lane, Rockville, Maryland 20857.

—*Michael J. Stoil, Ph.D.*

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Highlights from the 1987 National Drug and Alcoholism Treatment Unit Survey (NDATUS)

JOAN R. HARRIS, PH.D.
JAMES D. COLLIVER, PH.D.

This article is based on the report entitled "Highlights from the 1987 National Drug and Alcoholism Treatment Unit Survey (NDATUS)" recently published by the National Institute on Alcohol Abuse and Alcoholism and the National Institute on Drug Abuse. A detailed report of survey findings is scheduled for publication later this year and will be available from the National Clearinghouse for Alcohol and Drug Information, P.O. Box 2345, Rockville, MD 20852. Persons wishing to use the survey data tape should contact Dr. Frederick Stinson at the Alcohol Epidemiologic Data System, CSR, Incorporated, 1400 Eye Street, NW, Suite 600, Washington, DC 20005.

BACKGROUND INFORMATION

The National Drug and Alcoholism Treatment Unit Survey (NDATUS) was first conducted in 1974 by the National Institute on Drug Abuse (NIDA) and has been conducted every 2 to 3 years since then. In 1979, NDATUS was expanded to include alcoholism as well as drug abuse facilities; since that time it has been sponsored jointly by NIDA and the National Institute on Alcohol Abuse and Alcoholism (NIAAA). NDATUS is a voluntary survey that is designed to be a census of all known drug abuse and alcoholism treatment facilities in the United States. This article is based on preliminary data on alcoholism treatment derived from the 1987 NDATUS. The full 1987 report, which will include data from both drug abuse and alcoholism facilities, is scheduled to be published later this year. Data on clients in treatment pertain to the point-prevalence date of October 30, 1987.

The purpose of NDATUS is to identify all drug abuse and alcoholism treatment and prevention facilities throughout the nation and to collect information regarding their scope, utilization, and other characteristics. Facilities in both the public and private sectors are included, regardless of the source of funding support. Unit identification and descriptive information such as ownership and specialized programs are collected from treatment and nontreatment facilities. From treatment units, NDATUS also collects data about the types of services provided, client capacity and census on the point-prevalence date, client demographic characteristics, and funding amounts and sources.

The data are collected in cooperation with the State Alcohol and Drug Abuse Agencies, which assist in identifying programs to be surveyed, distributing forms to individual facilities, collecting forms and answering respondents' questions, checking and editing data, and submitting completed questionnaires.

In a departure from previous surveys, which required that facilities be identified by a unique Government-issued identification number, the 1987 NDATUS accepted the States' identification numbers and their definition of what constitutes a facility for reporting purposes. In some cases multiple-site facilities were reported as a single unit (representing the parent organization); in other cases each site was reported as a separate facility. Although this variation may affect the number of facilities, it has no effect on the total number of clients reported.

Following a brief section on the total number of facilities reporting, including both treatment and prevention units, the remainder of the report is restricted to data on facilities providing treatment services. Topics

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addressed include numbers of clients in treatment, budgeted capacity and utilization rates, numbers of clients by facility location or environment and type of treatment, client demographic characteristics, facility counts and client census by facility location, financial support for treatment services by funding source, facility ownership, intravenous drug users in treatment, number of clients in the 12 months ending with the point-prevalence date, and numbers of facilities and client census by State. More comprehensive information including drug client data will be provided in the 1987 main findings report to be published later this year.

In most cases tabulations of treatment data are based on facilities that reported either budgeted client capacity or actual clients on the point-prevalence date. However, tables showing utilization rates are based on data from facilities that reported budgeted capacity; these tables exclude a few facilities that reported actual clients but no budgeted capacity.

It also should be noted that data for individual items are sometimes missing. In the tables in this report the total numbers of clients, facilities, etc., vary because of the exclusion of observations for which particular items were not reported.

Table 1 shows the number of facilities serving alcohol clients on the point-prevalence date of October 30, 1987. While some facilities serve only alcohol clients, others serve both alcohol and drug clients. In Table 1, it may be seen that a larger number of facilities (5,360) serve both types of clients rather than restricting services to alcoholic clients only (2,132). Numerically, more facilities are devoted to treatment as a facility function.

As stated in the footnote to the table, facilities may report more than one function in regard to treatment, prevention/education, and other. For the NDATUS survey, the following definitions hold for facility functions:

- Treatment functions refer to formal, organized services for persons who have abused alcohol. These services are designed to alter specific physical, mental, or social functions of persons receiving care. Detoxification services are considered to be treatment.
- Prevention/education functions include activities intended to reduce or minimize the incidence of new alcoholism problems and the negative consequences of the use of alcohol.

Table 1 **Total number of alcohol facilities reporting to NDATUS by facility function and facility orientation: October 30, 1987**

Facility function	Alcohol-only facilities	Combined alcohol and drug facilities	All facilities
Treatment	1,708	4,083	5,791
Prevention/education	1,132	3,476	4,608
Other	946	2,492	3,438
Number of facilities	2,132	5,360	7,492

NOTE: As facilities may report more than one function, columns do not sum to the total number of facilities.
SOURCE: NIDA and NIAAA, 1987 National Drug and Alcoholism Treatment Unit Survey.

Table 2 **Total numbers of alcohol clients in treatment and number of facilities according to facility orientation: October 30, 1987**

	Alcohol-only facilities	Combined alcohol and drug facilities	All facilities
Clients	136,917	213,696	350,613
Number of treatment facilities	1,708	4,083	5,791

SOURCE: NIDA and NIAAA, 1987 National Drug and Alcoholism Treatment Unit Survey.

Treatment Facilities and Clients in Treatment

As shown in Table 2, alcoholism treatment was provided in a total of 5,791 facilities, including 1,708 facilities that provided only alcohol treatment services and 4,083 that provided services to both drug and alcohol clients. These facilities were serving a total of 350,613 alcohol clients in treatment on the point-prevalence date of October 30, 1987.

Budgeted Capacity and Utilization Rate

A comparison of alcohol treatment facilities, clients in treatment, budgeted capacity, and utilization rate by facility orientation on the point-prevalence date of October 30, 1987, is shown in Table 3. Budgeted capacity refers to the number of beds allocated for residential alcohol treatment, or the number of nonresidential alcohol clients who could be served with available physical and staff resources. The utilization rate refers to the proportion of budgeted capacity actually in use on the point-prevalence date. Examination of the table shows that alcoholism-only facilities had the highest utilization rate, 83.4, for the number of clients within the budgeted capacity of 1,664 facilities. On the other hand, in combined alcohol and drug facilities, the number of alcohol clients relative to budgeted

capacity revealed a utilization rate of 79.8, a difference of 3.6 points.

Treatment Client Demographic Characteristics

Table 4 presents data on the demographic characteristics of alcohol clients. Data for clients whose sex, race/ethnicity, or age were unknown are excluded, resulting in a differing total number of clients for these characteristics.

The age distribution of alcohol clients is concentrated in the categories of ages 25-44 years (55.0 percent). When the age percentages are cumulated from younger to older, 57.5 percent of those in treatment on October 30, 1987, were under 35 years of age and 81.5 percent were under 45 years of age.

It may be seen, however, in Table 4 that almost one-fourth of all alcohol treatment clients on October 30, 1987, were female (23.7 percent). By race/ethnicity, blacks were somewhat overrepresented in terms of their composition in the general population with 15.4 percent of total alcohol treatment clients. While all minority populations represented 28.5 percent of such clients, overall, almost two-thirds (71.5 percent) were white, a slightly smaller percentage than in the general population.

Type of Care and Environment/Facility Location

The "type of care" variable relates to inpatient/residential care with subcategories and outpatient/nonresidential care. Similarly, "facility location" relates to hospital and nonhospital care. As might be anticipated, Table 5 shows that clients in hospitals were evenly split between inpatient and outpatient care (50.8 percent and 49.2 percent, respectively). On the other hand, alcohol clients in nonhospital care settings show a distribution of 10.0 percent in inpatient/residential settings as opposed to 90.0 percent in outpatient/nonresidential settings.

These same results are consonant with a review of some of the inpatient/residential subcategories. While almost or slightly more than three-fourths of all such clients were in rehabilitation or recovery programs (which exclude detoxification), there are differences in types of detoxifica-

Table 3 **Number of alcohol treatment facilities, number of clients in treatment, budgeted capacity, and utilization rate by facility orientation: October 30, 1987**

Facility orientation	Number of facilities[1]	Number of clients[1]	Budgeted capacity	Utilization rate[1]
Alcoholism-only facilities	1,664	131,241	157,281	83.4
Combined facilities	3,963	206,687	259,056	79.8
Total alcoholism clients	5,627	337,928	416,337	81.2

[1] Excludes data from facilities which did not report budgeted capacity for alcohol clients.
SOURCE: NIDA and NIAAA, 1987 National Drug and Alcoholism Treatment Unit Survey.

Table 4 **Percent distribution of alcohol treatment clients by sex, race/ethnicity and age: October 30, 1987**

Sex, race/ethnicity and age	Alcohol clients
Male	76.3
Female	23.7
Number of clients[1]	336,877
White	71.5
Black	15.4
Hispanic	9.9
Other race/ethnicity	3.2
Number of clients[1]	329,992
Under 18 years	6.4
18-20 years	6.4
21-24 years	13.7
25-34 years	31.0
35-44 years	24.0
45-54 years	11.7
55-64 years	5.2
65 years and over	1.7
Number of clients[1]	327,698

NOTE: Percentages in distributions may not sum to 100 because of rounding.
[1] Excludes clients for whom sex, race/ethnicity, or age was not reported.
SOURCE: NIDA and NIAAA, 1987 National Drug and Alcoholism Treatment Unit Survey.

Table 5 **Number of alcohol clients in treatment by type of care and facility location: October 30, 1987**

Type of care	Facility location: Hospital	Facility location: Nonhospital	Total
Inpatient/residential			
Medical detoxification	4,955	1,537	6,492
Social detoxification	409	3,606	4,015
Rehabilitation/recovery	13,906	23,833	37,739
Custodial/domiciliary	488	2,200	2,688
Total inpatient/residential	19,758	31,176	50,934
Outpatient/nonresidential	19,115	280,564	299,679
Total inpatients and outpatients	38,873	311,740	350,613

SOURCE: NIDA and NIAAA, 1987 National Drug and Alcoholism Treatment Unit Survey.

Table 6 **Number of alcohol treatment facilities and number of clients by facility location: October 30, 1987**

Facility location	Facilities	Clients
Community mental health center	842	60,946
Hospital [1]	1,166	55,270
Correctional facility	60	2,945
Halfway house/recovery house	698	12,838
Other residential facility	701	21,705
Outpatient facility	2,004	173,912
Other	319	22,973
Not reported	1	24
Total	5,791	350,613

[1] Includes general hospitals (including VA), alcoholism hospitals, mental/psychiatric hospitals, and other specialized hospitals.
SOURCE: NIDA and NIAAA, 1987 National Drug and Alcoholism Treatment Unit Survey.

Table 7 **Total financial support for alcohol treatment services by funding source and number of facilities reporting receiving money from each source: Fiscal year including October 1987**

Source	Amount	Percent	Facilities reporting
State Government (includes ADAMHA Block Grant)	$345,023	20.2	2,588
Local Government (e.g., city, county)	107,660	6.3	1,852
ADAMHA Program support (Other than Block Grant)	9,440	0.6	179
Other Federal funds	76,957	4.5	530
State/Local Government fees for service	78,830	4.6	805
Private donations	26,906	1.6	1,274
Public Welfare (e.g., Title XX, Food Stamps)	27,778	1.6	887
Public Third Party (e.g., CHAMPUS, Medicaid)	145,746	8.5	1,368
Private Third Party (e.g., Blue Cross/Blue Shield, HMO)	592,447	34.6	2,209
Client fees	236,531	13.8	3,727
Other	64,752	3.8	927
TOTAL	1,712,069	100.0	4,949

NOTE: Amounts in funding source categories may not sum to total because of rounding. The number of facilities reporting does not equal the total of facilities reporting separate funding sources because of facilities receiving funding from multiple sources.
SOURCE: NIDA and NIAAA, 1987 National Drug and Alcoholism Treatment Unit Survey.

tion as appropriate for the facility location. One-fourth of clients in hospital/inpatient settings were receiving medical detoxification, which is the use of medication under the supervision of medical personnel in a hospital or other 24-hour-care facility. Only 4.9 percent of clients in nonhospital settings were receiving such care. At the same time, 11.6 percent (as opposed to 2.1 percent) of clients in nonhospital locations received social detoxification services, which involve the systematic reduction or elimination of the effects of alcohol in the body on a drug-free basis.

Facility Location

It may be seen from Table 6 that outpatient facilities represented 34.6 percent of all alcohol treatment facilities, but served 49.6 percent of alcohol clients on October 30, 1987.

Financial Support for Treatment Services

Alcohol treatment facilities reported $1.71 billion in total financial support for alcohol services for their fiscal years including October 1987 (Table 7). Private third-party payers, such as Blue Cross/Blue Shield and HMOs, provided the largest share of financial support for alcohol treatment services, accounting for 34.6 percent of such funds. When these sources are coupled with client fees, the two sources account for 48.4 percent of receipts for alcohol care. State government funding sources represent only 20.2 percent of all receipts for alcohol treatment.

Ownership of Treatment Facilities

Of the 5,791 alcohol treatment facilities that reported to NDATUS, 65.5 percent were privately owned, nonprofit facilities (Table 8). These facilities accounted for 57.6 percent of alcohol clients in treatment on the point-prevalence date. Facilities owned by State and Local governments accounted for higher proportions of alcohol clients than their representation in sheer numbers, which suggests that these facilities had larger numbers of such clients, on average, than those in other ownership categories.

Clients Who Were Intravenous Drug Users

Commensurate with present concerns regarding the spread of AIDS, treatment facilities were asked to report the percentage of their clients who

were intravenous drug users (IVDUs) at the time they started treatment. This item is relevant for data reported in the alcohol section of the survey because of alcohol clients with secondary drug problems.

A total of 14,464 alcohol clients were reported to have been intravenous drug users at the time they entered treatment. This figure represents 4.1 percent among alcohol clients (14,464 IVDUs in 350,613 alcohol clients).

Number of Clients Treated in the Past 12 Months

Historically, NDATUS has collected client census information solely for a particular point-prevalence date. Starting with the 1987 NDATUS, however, questions regarding the unduplicated counts of alcohol clients treated in the 12-month period ending October 30, 1987, have been added. Data reported to NDATUS on this new variable indicate that in the 12 months ending October 30, 1987, a total of 1,430,034 alcoholism clients were treated at 5,582 facilities.

Data by State

State-level data on alcohol treatment facilities and clients in treatment on the point-prevalence date of October 30, 1987, are shown in Table 9. California and New York together accounted for slightly more than one-fourth of all clients in treatment at the 5,791 reporting facilities. ■

Table 8 **Distribution of alcohol treatment facilities and clients by facility ownership: October 30, 1987**

Ownership	Facilities		Clients	
	Number	Percent	Number	Percent
Private for-profit	900	15.5	42,878	12.2
Private nonprofit	3,794	65.5	201,789	57.6
State/Local government	934	16.1	87,544	25.0
Federal government	163	2.8	18,402	5.2
Total	5,791	100.0	350,613	100.0

NOTE: Percentages in distributions may not sum to 100 because of rounding.
SOURCE: NIDA and NIAAA, 1987 National Drug and Alcoholism Treatment Unit Survey.

Table 9 **Number of alcohol treatment facilities and number of clients in treatment by State: October 30, 1987**

State	Facilities	Clients	State	Facilities	Clients
Alabama	44	1,491	Nebraska	107	4,435
Alaska	30	1,293	Nevada	40	777
Arizona	75	3,814	New Hampshire	53	2,401
Arkansas	46	1,950	New Jersey	155	8,857
California	880	63,177	New Mexico	47	4,015
Colorado	161	8,681	New York	398	36,126
Connecticut	109	3,471	North Carolina	98	6,331
Delaware	17	1,393	North Dakota	30	1,671
Dist. of Columbia	13	1,244	Ohio	239	12,813
Florida	197	11,783	Oklahoma	53	2,431
Georgia	52	5,932	Oregon	130	7,376
Hawaii	30	738	Pennsylvania	328	14,684
Idaho	28	1,332	Rhode Island	41	2,760
Illinois	201	12,523	South Carolina	51	10,299
Indiana	96	5,380	South Dakota	29	1,469
Iowa	94	3,398	Tennessee	55	3,116
Kansas	74	2,596	Texas	228	5,414
Kentucky	130	5,106	Utah	39	4,254
Louisiana	77	5,146	Vermont	19	1,082
Maine	40	2,319	Virginia	80	7,501
Maryland	152	10,333	Washington	99	9,550
Massachusetts	166	12,059	West Virginia	22	3,186
Michigan	208	12,031	Wisconsin	130	6,856
Minnesota	139	2,481	Wyoming	23	956
Mississippi	84	3,935	Puerto Rico	24	3230
Missouri	94	3,976			
Montana	34	1,441	TOTAL	5,791	350,613

SOURCE: NIDA and NIAAA, 1987 National Drug and Alcoholism Treatment Unit Survey.

A New Agenda for Alcohol Research

The Institute of Medicine Reports on Causes and Consequences–A Summary

Nearly a decade ago, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) asked the Institute of Medicine (IOM), an agency of the National Academy of Sciences, to review and assess the status of alcohol research. The resulting report, *Alcoholism, Alcohol Abuse, and Related Problems: Opportunities for Research,* provided the first comprehensive review of alcohol-related research for scientists, planners, policymakers, and other interested people.

The pace of alcohol research has accelerated dramatically since the report was released in 1980. During that same year, as its first decade was drawing to a close, NIAAA supported a total of 167 research projects at a combined funding level of $22.2 million. By 1987, the number of NIAAA-supported research projects had increased to 387 and the total funding to $71.2 million.

Because of the opportunities provided by advances in alcohol-related research since 1980, NIAAA again asked the Institute of Medicine to review new scientific knowledge, assess current research activities, and identify the most promising areas to pursue over the next 5 years.

This assessment will result in two reports, one addressing the causes and consequences of alcohol-related problems and the other addressing prevention and treatment. The first report, entitled *Causes and Consequences of Alcohol Problems: An Agenda for Research,* was issued in 1987. What follows is a review of that report. The second report is scheduled to be completed in the fall 1989.

The report on causes and consequences was prepared by a 10-member group of scientists, the Institute of Medicine Committee

Alexander Tucker

Alcohol-related research has accelerated dramatically and made many advances over the past decade.

for the Study of Alcohol-Related Problems, chaired by Robert Straus, Ph.D., of the College of Medicine of the University of Kentucky.

The review contains some technical terminology. As an aid to the reader, a short glossary is included at the end of the summary. Limited copies of the full IOM Report are available by writing: Mary Dove, National Institute on Alcohol Abuse and Alcoholism, Parklawn Building, Room 16C–14, 5600 Fishers Lane, Rockville, Maryland 20857.

Major Research Questions

According to IOM's study of the causes and consequences of alcohol problems, "Ways in which people respond to alcohol, varied capacities to drink safely, and relative risks for development of alcohol-related problems pose major questions for research. The study of drinking behavior and the personal and societal consequences of alcohol use requires conceptual approaches that accommodate knowledge from many biological, behavioral, and social science disciplines."

The report summarizes what are termed "exciting advances in knowledge" in four areas:

- identification of areas of cell membranes with differential sensitivities to alcohol
- identification of risk factors that divide the alcoholic population into subpopulations
- effects of the context of drinking and the drinker's expectations on drinking behavior and consequences
- clarification of the relationships between alcoholism and other types of psychiatric problems.

Altogether, these advances are linked to the increase in support for alcohol research. They provide refinements of the knowledge base needed for progress in prevention, treatment, and rehabilitation.

Policy Recommendations

The 1980 report emphasized the costs associated with alcohol abuse and the need to attract scientific talent to alcohol-related research. The new report recognizes the work of researchers whose activities merit further support. Several policy points are highlighted:

- Special genetically developed (and developing) animal lines should be made available to the alcohol research community, and funding for this activity should be stabilized.
- Funding must continue for qualitative and quantitative social science research. Retrospective data analysis or reanalysis should continue to be encouraged.
- The value of the computerized abstract service provided by NIAAA should be enhanced with a thesaurus.[1]
- Diverse groups of investigators should coordinate their studies incorporating registered subjects from the general population and high-risk groups to permit cost sharing and to correlate observations.
- To interpret biological and behavioral science approaches and knowledge, thought should be given to training a cadre of researchers with the appropriate analytic and critical skills.
- Communication and coordination among Federal agencies interested in research on alcohol and its impact on society should be improved.

Following its two introductory chapters, the report presents 10 chapters of reviews and recommendations. These 10 chapters are summarized below, highlighting the panel's recommendations for future research.

Quantifying the impact of alcohol (Chapter 3). Data on alcohol-related morbidity and mortality vary widely. For example, estimates of the prevalence of alcoholism in hospitalized patient populations range from 9 to 55 percent. Such extreme differences reflect variations in the reporting methods. One basic difficulty is the lack of a true consensus on the definition of alcoholism.

In treatment settings, variations in definitions give rise to differences in diagnostic criteria. In addition, a physician may be reluctant to enter alcohol-related problems on a patient's record. In other cases, health professionals may need to be alerted to the role alcohol can play in the patient's illness. It is not yet known, in fact, just how large a role alcohol plays in multiple-cause diseases and injuries.

Estimates of annual alcohol-related mortality range from 69,000 to 200,000. The relative youth of the victims is underscored by data on the years of life lost. Reports for 1983 estimated that an average of 20 years of life was lost by those who had died before age 65 from alcohol-related causes.

Specific, quantified measures of the full social impact of alcohol-related problems are even more difficult to obtain than reliable measures of morbidity and mortality. Alcohol abuse has been estimated to affect the families of 56 million American adults.

An important aspect of alcohol abuse is its cost to society. NIAAA, assisted by the Research Triangle Institute, estimated that the social cost of alcohol abuse in the United States was $89 billion in 1980. The projected estimate for 1983 was nearly $117 billion.

The report contained the following epidemiological research recommendations:

[1] *The NIAAA data base is now online with BRS Information Technologies, Inc., and a thesaurus is being developed.*

- study the biological and social mechanisms leading to individual and group differences in susceptibility to alcohol-related problems
- collect more extensive and accurate information on the prevalence and the role of alcohol in accidents, especially as alcohol interacts with other drugs and with other variables such as age
- develop more accurate estimates of the prevalence of fetal alcohol syndrome
- develop more accurate estimates of alcohol's contribution to all causes of death and study the extent to which alcohol's contribution is underreported
- develop a consensus definition and quantitative measurements of the adverse impact of excessive drinking on victims, especially on children and spouses of alcoholics and on families of victims of alcohol-related accidents.

Biochemistry of ethanol metabolism (Chapter 4). The starting point for understanding individual physiological responses to alcohol is the study of the enzymes that metabolize ethanol. Thus far, variations in the form and the activity of one enzyme, aldehyde dehydrogenase, have been linked with alcohol-related behavior and problems.

The structures of key enzymes are known, and the DNA encoding some of the subunits has been isolated and cloned. Studies of enzyme expression will be advanced by using the DNA clones as probes for new information.

The IOM committee made the following related research recommendations:

- continue to study the genetic loci for alcohol dehydrogenase and aldehyde dehydrogenase to determine how these enzymes are regulated
- study the hybrids of hepatomas and normal human cells to further delineate liver-specific gene expression and to provide a pool of cells for noninvasive clinical tests
- measure the expression of messenger RNA or use antibodies to estimate protein levels to clarify the control of enzyme synthesis and the subunits' activities within cells
- study mutant animal models that lack one of the ethanol-metabolizing enzymes to discern their responses to and metabolism of ethanol and possible enzyme participation in neurological functions.

Animal models for research (Chapter 5). Specially bred animal models are available for research on alcohol-seeking behavior, on sensitivity to the narcotic effects of ethanol, on a tendency to develop tolerance to ethanol, and on the propensity for withdrawal seizures. These developments confirm that alcohol-related behavior is partly controlled by "constellations of genes."

Analysis of the behavior of inbred mice has revealed three separate clusters of variables in nervous system sensitivity to ethanol. Individual differences can occur in one, two, or all three of these areas.

Some researchers are using selected animal models to learn which brain regions are involved in specific behavioral effects of ethanol. In other animal studies, operant conditioning techniques are being used to study the reinforcing effects of drinking.

Research in the following areas is recommended:

- study the effects of ethanol on reward systems in the brain in animal groups that differ in their alcohol-seeking behavior
- develop new animal models to test the generality of previous findings (possibly through recombinant DNA techniques, using existing stable models)
- study the interactions of ethanol with vasopressin, opioid peptides, and thyrotropin-releasing hormone in animal groups that differ in behavioral responses to ethanol
- study the effects of pharmaceutical agents on alcohol-seeking behavior, on the development of alcohol tolerance, and on tendencies toward alcohol dependence (if the results are promising, human studies should follow)
- evaluate gains in knowledge about alcohol-seeking behavior for implications for humans (for example, do reinforcing properties of alcohol differ between children of alcoholics and children of nonalcoholics?)
- use alcohol-preferring animals in studies of medical disorders associated with chronic alcohol consumption.

Neurosciences (Chapter 6). Unlike other psychoactive substances, ethanol does not act by binding with a specific set of receptor molecules in the brain. Therefore, neuroscientists must study the effects of ethanol on cell membranes, on pathways for transmission of nerve impulses, and on participating agents (e.g., calcium ions, cyclic AMP) within cells. Scientists are examining both vertebrate and invertebrate systems in the laboratory and studying the physiology of alcohol-related behavior in both experimental animals and humans. They are striving to relate ethanol-induced changes in neural activity to observed changes in behavior.

Acute doses of ethanol "fluidize" cell membranes; however, after chronic ethanol treatment, the membranes become more rigid. Restricted regions of the membrane are sensitive to ethanol. A prime

area for research is a possible relationship between these membrane effects and alcohol intoxication, reinforcement, tolerance, or dependence.

Effective doses of ethanol appear to influence events in some neural pathways in the brain. In addition, rapid gains in understanding the modulating roles of ions and other agents within cells and cell membranes have opened new avenues in alcohol research. New techniques are being used to study interactions of ethanol with these cell components.

Research opportunities in neurophysiology include electrophysiological studies of brain activity in human subjects and to complement other studies on specific brain regions. Other recommended strategies would integrate behavioral with physiological findings on tolerance and dependence. One important objective is to identify physiological and biochemical markers of tolerance and dependence in humans.

The committee recommended the continued use of "sophisticated tools and techniques of neurophysiology and neurochemistry" for the following research efforts:

- define the measured neural responses to ethanol and their relation to human behavior (to pave the way for testing specific hypotheses about ethanol action on the central nervous system [CNS])
- examine both acute and chronic effects of ethanol on the CNS at three levels—simple neurophysiological systems, animals, and human beings
- explore the effects of ethanol on learning, memory, and tolerance in simple systems having large neurons or well-characterized neural networks
- use animal strains selected for alcohol-related behavior to pair high-response with low-response groups and to study CNS activities related to ethanol reinforcement, tolerance, and withdrawal
- use brain-imaging techniques and electrophysiological tests in conjunction with neurochemical tests of blood or urine to study individuals in withdrawal, high-risk individuals prior to alcohol exposure, and individuals experiencing tolerance or dependence.

Direct methods for studying inherited tendencies . . . use DNA technologies to locate . . . specific markers for alcoholism.

Heritable determinants of risk (Chapter 7). Genetics researchers are exploring specific genetic components involved in alcoholism along with the predisposing effects of environmental and experiential factors.

Researchers now have access to sophisticated computer techniques and multivariate statistics. Through factor analysis, they have found that alcohol dependence and loss of control, social problems, personality variables, family problems, affective symptoms, and psychotic symptoms require separate assessment.

Recently, longitudinal studies of families have enabled researchers to distinguish antecedents of an illness from sequelae of the illness.

According to one theory, alcoholism takes two basic forms: milieu limited (Type 1) and male limited (Type 2). For the Type 1 subgroup, predisposing environmental factors appear to be necessary for alcoholism to develop. Another study suggests that a CNS enzyme, monoamine oxidase (MAO), may be a biological marker that differentiates these subgroups of alcoholics, because MAO activity is more inhibited by ethanol in Type 2 alcoholics than in Type 1 alcoholics. In addition, blood platelets of alcoholics show lower levels of MAO activity than do those of nonalcoholics.

Other studies use recordings of brain electrical activity. The electroencephalograms (EEGs) of sons (but not daughters) of alcoholic males are likely to show excessive high-frequency activity. Some recordings of the brain activity of alcoholics, sons of alcoholics, and abstinent alcoholics have shown reduction in the size of a brainwave component (P3) associated with thought processes involved in visual or auditory perception. Some researchers think that these neurological differences may underlie differences in drinking behavior.

Direct methods for studying inherited tendencies toward alcohol-related problems use DNA technologies to locate genes that can serve as specific markers for alcoholism. Data on the development of alcohol abuse and alcoholism across generations support the hypothesis of a genetic component in familial alcoholism.

The committee made the following recommendations for genetic research:

- seek explicit definitions of clinical subtypes
- conduct multilevel evaluations of the proposed subtypes
- conduct prospective longitudinal research to evaluate variables proposed as behavioral markers for a predisposition to alcoholism
- assess clinical, neurobiological, and psychosocial variations across two or more generations to learn about gene-environment interactions
- study alcohol responses—initial sensitivity, tolerance, and rein-

forcement—in nonjuvenile subjects at high risk for alcoholism
- use molecular genetics, brain imaging, and noninvasive screening for enzymes to study susceptibility in families
- conduct parallel studies involving cell lines from well-described members of susceptible families, clinical profiles of subtypes, and quantitative modeling.

Social determinants of risk (Chapter 8). Social and epidemiological research has demonstrated that major changes occur in drinking habits, both in whole populations and within the course of individual lives. In addition, the focus of this research area has broadened to include alcohol-related beliefs, behaviors, and varied problems.

Within this context, the committee drew attention to the need for additional research on American women, on the extent to which couples function as social units in their drinking, on differences when people drink in same-sex or mixed-sex groups, and on how individuals influence each other's drinking. In addition, drinking among the general, nonethnic population of the country merits more attention, and sectional differences require analysis. Finally, age-oriented analyses of drinking in the United States suggest that different risks are encountered in different age groups. There is a need for mapping out the lifetime course of drinking problems. Emphasis on the inception of heavy drinking may now need to be balanced by such factors as stress or a spouse's drinking, which may sustain heavy drinking over a period of years. Research on racial and ethnic differences in drinking recently has been aided by nationwide surveys of black and Hispanic populations. Identifying variations in drinking patterns and problems within, as well as between, major ethnic categories has provided important new insights.

Social research that addresses solving alcohol-related problems gives considerable attention to public efforts. For example, the U.S. literature on the effects of changing the legal drinking age and on drinking-and-driving countermeasures is strong. In the many studies on the effects of alcohol on driving and other performance tasks requiring skills and judgment, however, knowledge gaps still exist regarding such important matters as the effects of an alcohol hangover and the combined effects of alcohol and fatigue.

Other countries have led the way in studying drinking-related policy and cultural shifts. The IOM report emphasizes the need for international comparative studies.

Social psychology in the United States has been influenced by the psychology of thinking. This cognitive emphasis has led to research showing that expectations about alcohol consumption affect drinking-related behavior—and explanations of such behavior. Similarly, a cognitive approach is being used to develop strategies for recovery and relapse prevention. Increased attention to studies of social and environmental correlates of heavy drinking also is indicated.

The first IOM report called for studies involving "natural experiments," such as changes in law, policy, or circumstances to effect social change. Such studies still are needed. In addition, interest is growing for trend analyses and historical studies of alcohol issues and patterns. The IOM panel specifically recommends "the application of qualitative historical methods to major issues in the causes and correlates of alcohol problems."

In the area of social research, measurement issues are increasingly important. Because of improvements in measuring blood alcohol levels, substantial progress can be expected soon in reporting casualties and other problems related to acute effects of alcohol consumption. In addition, researchers should measure more than one dimension of alcohol consumption, such as average daily consumption. No single dimension of drinking behavior is adequate for measuring the risks associated with a wide range of multifactor problems.

The committee made the following recommendations for social and epidemiological research:

- conduct both qualitative and quantitative historical studies on patterns of change and relations
- use population surveys, statistical series, and other sources to map patterns and covariations of alcohol use, covering the diverse sections of the U.S. population
- conduct longitudinal studies of individual drinking practices and problems, both immediate and long term
- conduct qualitative studies of normative and behavioral patterns at a given time and as changes occur in the course of a lifetime
- conduct studies of natural and planned policy experiments to learn how policy interventions and other social changes affect drinking practices and problems.

Psychopathology related to alcohol abuse (Chapter 9). A psychiatric disorder can precede, accompany, or follow alcohol abuse. The causal relations are unclear, and this area of alcohol research abounds with unsettled issues. Foremost among these are the psychopathology definitions and the psychiatric criteria for alcohol dependence.

The committee examined a number of areas, including disorders, depression, drug codependency, and withdrawal:

—*Antisocial personality disorder (ASP).* Individuals with ASP report dysphoric moods (anxious, unhappy), demonstrate impulsive behavior rooted in sensation-seeking attitudes, and tend to have poor and unstable object relations (associations with other individuals, particularly) and a history of underachievement despite normal or above normal intelligence. Research on ASP as a risk factor for alcoholism would be advanced by longitudinal studies designed to identify biological, psychosocial, environmental, behavioral, and genetic variables related to childhood conduct disorder (CCD), a history of which is often required for a diagnosis of ASP. Another question for future study is a possible relationship of CCD (with or without adult ASP) to alcohol-related aggressive or violent behavior in some individuals.

—*Anxiety disorders.* Although anxiety disorders are commonly found in association with alcoholism, very few patients appear to have had anxiety symptoms that antedate their alcohol-related problems.

Clinical studies show that anxiety symptoms increase during heavy drinking or periodically during abstinence of several weeks. Interaction between alcohol dependence and the anxiety disorder may complicate the course of alcoholism and recovery; it thus merits further investigation.

—*Depression.* Clinical depression appears frequently in alcoholics, predominantly in females. Depressive symptoms in alcoholics probably have multiple causes, ranging from the toxic effects of alcohol to the presence of personality disorders antedating the use of alcohol. Such symptoms, often present during drinking and the acute withdrawal period, tend to clear over time. Some alcoholics, however, report feeling depressed over months or years.

It has been reported that detoxified alcoholics may metabolize some of the tricyclic antidepressants so rapidly that the usual therapeutic dosage may not be optimal. Future studies in alcoholic patients should include blood level measures.

Biological measures used in studies of depression in nonalcoholic subjects may be of limited use in studies of recently detoxified alcoholics. This is particularly true of the dexamethasone suppression test and studies involving catecholamines, serotonin, or sleep variables.

Future studies of depression and its treatment in the alcoholic call for addressing the question of a separately diagnosable affective disorder; measuring the level of cognitive function or impairment; probing for a family history of affective illness, including careful histories of alcohol use and dependence and of depressive symptomatology; and assessing life stress and the adequacy of social supports.

—*Drug dependencies.* The problems arising from combined use of alcohol and other drugs have changed as "drugs of choice" have changed in the general population. Systematic data on drug use and dependence in alcoholic patients would clarify the prevalence and current types of drug dependencies and potential impact on treatment needs. Such data can lead to hypotheses for small-scale clinical research.

—*Withdrawal syndrome.* The acute alcohol withdrawal syndrome includes anxiety, agitation, irritability, and tremors, in addition to abnormalities in body temperature, blood pressure, heart rate, and seizure threshold. After acute withdrawal, many patients complain of persistent insomnia and feelings of depression or anxiety.

Some of these symptoms may indicate long-lasting physiological changes, which may contribute to the risk of relapse. The data on brain hyperexcitability that persists after cessation of alcohol consumption suggest that alcohol consumption by an abstinent alcoholic may elicit withdrawal-like symptoms.

Research using animal models is recommended to determine whether latent hyperexcitability (a tendency toward high excitability in the brain) is associated with a persistent tendency to consume alcohol. Careful studies involving long-term abstinent alcoholics would also be of interest.

Also related to hyperexcitability is a suggested study of ethanol-induced changes in the activity of gamma-aminobutyric acid (GABA) in the brains of animal models. GABA is the principal transmitter of nerve signals that inhibit activity of other nerve cells in the brain. Other studies could assess the relationship between dependence severity and the electrophysiological dimensions of long-term abstinence.

The committee also made the following psychiatric research recommendations:

- conduct longitudinal studies to identify risk-related biolcgical and environmental factors
- compare in various settings the results of specific psychopathology diagnoses with assessments based on more global or inclusive observations
- examine in various settings the distinction between primary and secondary psychopathologies associated with alcoholism

- study (in well-controlled treatment trials as well as in small-scale laboratory investigations) the subjective symptoms associated with subacute withdrawal and post-withdrawal recovery in relation to abnormalities in brain function and thinking described in alcoholic patients after withdrawal.

Medical consequences of alcohol abuse (Chapter 10). The kidneys and the lungs eliminate only about 2 to 10 percent of beverage alcohol, or ethanol, absorbed by the body. The remaining ethanol may damage both individual cells and the functioning of organs and other tissues. Direct cell injury by ethanol is thought to be related to its disruptive effects on cell membranes and on structures within the cell. Tissue damage from ethanol is believed to result either from biochemical changes that accompany the metabolism of ethanol—in effect, the body's normal process of converting ethanol to other substances—or from direct effects of alcohol as a solvent. However, little is known about the primary effects of ethanol metabolism in most tissues.

The primary target organs for alcohol injury are the liver, pancreas, heart, and bone marrow. Other important targets are the endocrine (hormone), gastrointestinal (digestive), and immune systems. Epidemiological studies charting the development of resulting alcohol-related disorders are needed. Other research objectives include nutritional studies and the study of cardiovascular function, pulmonary function, hypertension, and levels of white blood cells and circulating hormones as related to levels of ethanol and other drugs, especially tobacco.

The committee recommended specific biomedical research in a wide range of areas. Several of these recommendations are listed below.

- Concentrate on humans in the study of liver disease (in part because no experimental animals have been found to develop a condition analogous to the hepatitis found in humans) and consider using magnetic resonance imaging (MRI), a technique that produces x-ray-like images of soft tissues, to help explain alcohol-induced structural changes within liver cells.
- For cancer-related alcohol research, use various approaches to study growth regulation, cancer-provoking enzyme changes in the liver, and tumor development in alcohol-preferring rodents.

The primary target organs for alcohol injury are the liver, pancreas, heart, and bone marrow.

- Conduct further research to explain the apparent relationship between alcohol abuse and cancerous and precancerous conditions, with possible emphasis on congeners (alcoholic beverage ingredients other than ethanol) that may contribute to the growth of tumors.
- Continue to study the effects of ethanol and its metabolism on the biology of pancreatic function and on the development of techniques for the detection of pancreatic injury.
- Examine how ethanol changes gastrointestinal functions, including alterations in regulation of the digestive process by the endocrine and nervous systems, effects of ethanol on the cells that line gastrointestinal organs, and the origin of nutritional deficiencies and the role that these deficiencies play in the development of tissue injury.
- Examine nutrient deficiencies for tissue repair in the wake of ethanol-related injury and the potential role of nutritional deficiencies in such medical problems as fetal alcohol syndrome, liver disease, pancreatic disease, and the development of cancer.
- Study the mechanisms by which ethanol induces hyperglycemia, ketoacidosis, and other disorders involving fats and carbohydrates.
- For better insight into how alcohol consumption can disrupt cardiac rhythms, increase hypertension, damage the heart muscle, and decrease cell populations in the blood (causing clinical anemia and other blood disorders), concentrate on improving methods for taking drinking histories, design studies to identify predisposing genetic factors, and develop better diagnostic techniques.
- Look more closely at alcohol's effects on cholesterol metabolism, with emphasis on the cholesterol transported in the bloodstream in high-density lipoprotein particles.
- Conduct additional epidemiological and prospective trials to clarify the relationship between alcohol use and heart disease.
- Collect epidemiological details on alcohol-induced brain damage, especially as associated with memory disorders.
- Continue to examine the neurological damage to the fetus as a result of alcohol and the possible role of nutrition in brain atrophy and cognitive loss.
- Analyze the medical consequences of alcohol consumption on the endocrine system, especially as its hormonal functions are complicated by interaction with other variables, including nutrition status and alcohol-related stress.
- Study in greater depth how alcohol can cause atrophy of the gonads, impotence, and infertility.

- Determine the effects of chronic alcohol abuse on estrogen-responsive tissues and other target tissues in women.
- Investigate the effects of plant-derived estrogens in alcoholic beverages.
- Conduct further work on the ethanol-thyroid metabolism relationship and its effect on the liver.
- Study the specific effects of chronic alcohol intake on the hypothalamic-pituitary-adrenal axis.
- Determine the medical effect of alcohol abuse on the immune system in five specific areas: 1) conduct epidemiological studies to learn whether alcohol abusers are especially susceptible to human immunodeficiency virus (HIV) infection and progressive disease, 2) study whether alcohol affects the course of the disease in individuals already infected by HIV, 3) study the proportions and the interactions of T4 and T8 cells in alcoholics who have AIDS, 4) compare infectious diseases and tumors in alcoholic and nonalcoholic AIDS patients, and 5) assess the effects of ethanol on the numbers and activities of natural killer (NK) lymphocytes (because of the possible role of NK cells in the immune response to tumors).
- Correlate data on tobacco smoking and alcohol drinking with data on lung infections.
- Analyze the relationship between infectious lung disease and socioeconomic status among alcohol abusers.
- Conduct epidemiological and biomedical studies about alcohol-related birth defects.
- Study the complexities of drug-and-ethanol effects with each drug to learn about specific interactions.
- Study the relationship of traumatic injuries and alcohol in five types of research: 1) conduct epidemiological studies on the role of alcohol in accidents in transportation, home, work, and recreational settings; 2) study the mechanisms involved in shock

Glossary

Affective disorder. Any mental disorder in which the characteristic symptoms include a major emotional disturbance. Also referred to as mood disorder. Depression and mania are affective disorders.

Alcohol dehydrogenase and aldehyde dehydrogenase. The two principal enzymes involved in detoxifying ethanol.

Aldehyde dehydrogenase. See alcohol dehydrogenase.

Antisocial personality disorder (ASP). A psychiatric category. The main features are antisocial behavior and an apparent lack of guilt or conscience.

Anxiety disorder. A condition in which the patient experiences an acute sense of fear that may last from a few minutes to several hours. Phobias are the commonest anxiety disorders.

Catecholamines. A group of chemically related compounds, including dopamine and epinephrine, that function as chemical "messengers" carrying nerve impulses to other nerves, muscles, or glands.

Cyclic AMP. A "second messenger" chemical that, when triggered by an incoming nerve "message," enables the receiving cell to respond.

Depression. A condition that resembles the state of grief following bereavement. *Reactive* depression is touched off by real-life events and usually lasts a short time. *Endogenous* depression has no obvious external cause and may be chronic. A depression of either kind is *clinical* when severe enough to require professional treatment.

Dexamethasone suppression test. A chemical test used for diagnosis of Cushing's syndrome and other disorders involving steroid hormones.

Ethanol metabolism. The process through which the body acts on beverage alcohol (ethanol) to detoxify it.

Ethanol metabolites. Chemical compounds produced by ethanol metabolism. The two principal ethanol metabolites are, first, acetaldehyde and, second, acetate.

Gamma-aminobutyric acid (GABA). A substance that, when transmitted through nerve fibers in the brain, inhibits or reduces the firing of impulses by other brain nerve cells.

Hepatoma. A liver tumor, either benign or cancerous.

HIV. Human immunodeficiency virus, the agent thought to be responsible for AIDS and AIDS-related syndrome.

Hyperglycemia and ketoacidosis. Related disorders that result from the body's inability to metabolize carbohydrates (e.g., sugar) in a normal fashion.

Messenger RNA. Ribonucleic acid strands that carry genetic "messages" from the cell nucleus to the cell plasma, where they guide the synthesis of specific proteins.

Morbidity. Occurrence of disease.

Mortality. Occurrence of death.

Multivariate statistics. Any statistical technique capable of analyzing the interaction of several variables at the same time.

from bleeding during acute intoxication and in cases of alcoholism; 3) evaluate the pathophysiology of the drowning, intoxicated patient, to reduce fatalities from nonlethal levels of blood alcohol; 4) study the effects of ethanol on bone metabolism; and 5) clarify the relationships of alcoholism and acute intoxication in burn patients.

Consequences of drinking on performance (Chapter 11). To perform a task, a person must coordinate several processes—sensory, perceptual, cognitive, and motor. Alcohol impairs each of these, and its use can result in traumatic injury. Even in healthy subjects, relatively low concentrations of blood alcohol (BAC less than 35 mg/100 ml) can disturb visual perception, muscle control, eye-hand coordination, and visually guided movement through space.

Promising areas for performance research are electrophysiological responses to visual stimuli, perceptual style (that is, how one perceives the effects of one's surroundings), selective attention, and applied methods in human performance.

Factors other than the level of ethanol have been found to cause variations in perception and control, including beverage type, expectation of an alcohol effect, a driver's apparent effort to compensate for the perceived alcohol effects, personality type, and, possibly, heredity.

The committee made the following recommendations for related research:

- broaden the research already conducted using motor vehicle driving to measure performance deficits induced by alcohol consumption and begin to use sophisticated experimental designs involving many human factors to test a wider spectrum of alcohol effects
- simultaneously analyze the skills involved in machine operation by human beings, i.e., monitoring, interpretation, and intervention.

Neural pathway. The route taken, through nerve fibers and nerve cell bodies, to bring about a certain reaction.

Neurophysiology. The study of the biological processes of the nervous system, including the brain.

Normative patterns. The patterns of belief defining what is regarded as correct or proper behavior. Normative patterns can differ from behavior patterns when people engage in behavior they do not believe is correct or proper.

Operant conditioning. The technique, developed by B. F. Skinner, of shaping a particular behavior by rewarding or punishing the behavior. The behavior that is being shaped is the "operant."

Opioid peptides. Chemicals with opium-like characteristics that may serve as chemical "messengers" between the nerve cells. The molecules on the nerve cell membrane that are "keyed" to opioid peptides are known as opioid receptors. See receptor molecules.

Prevalence and incidence. In epidemiology, prevalence is the overall occurrence of a behavior or a condition (e.g., the prevalence of alcoholism is low in some countries). Incidence is the documented occurrence of that behavior or condition within a set time period and population (e.g., the incidence of new cases of malaria in Cuba was 37 in 1970).

Psychoactive substance. Any substance that affects the mind or behavior.

Psychopathology. The branch of knowledge that deals with mental and emotional disorders.

Receptor molecules. In brain research, receptor molecules are the means through which nerve cells (neurons) receive "messages" in the form of chemicals released from other nerve cells. These chemical messengers are known as neurotransmitters. Receptor molecules are "keyed" to receive specific neurotransmitters.

Recombinant DNA. Deoxyribonucleic acid (the genetic material in all forms of animal life) that has had a strip of DNA from another organism inserted into its structure.

Serotonin. One of the substances in the brain that transmits nerve impulses.

Subacute withdrawal. Withdrawal from the effects of an addictive substance in which the symptoms are less severe than in acute withdrawal; often occurring as a lengthy phase of the withdrawal process following the more dramatic phase of acute withdrawal.

Thyrotropin-releasing hormone. A substance that signals the pituitary gland to release thyrotropin, which then stimulates activity in the thyroid gland.

Tricyclic antidepressants. A family of drugs used to relieve depression; all have three-ring molecular structures.

Vasopressin. A hormone produced in the brain that is normally an antidiuretic (inhibits urine production) but also may be involved in memory and in responses to ethanol.

Social consequences of alcohol abuse (Chapter 12). Social problems associated with alcohol abuse assume a variety of forms and usually involve several factors other than alcohol. The committee addressed both individual consequences of drinking alcohol and broader societal issues.

In addressing individual issues, the committee included problems at home and at work. The family looms large as an agent for informal social control of drinking and drinking-associated behavior. In self-reports by drinkers, family problems are the most frequently acknowledged type of alcohol-related problem. The literature on the role of drunkenness in family violence is largely anecdotal. The time has come for studies that are sensitive to intimate relationships, large in scale, and comprehensive in scope.

The adult children of alcoholics movement has been a catalyst for a body of literature that calls for a large research agenda. Studies in this area can be based on positive as well as negative outcomes for children, but most of the evidence points to adverse effects.

Despite the importance of work in human affairs, surprisingly little research is being done on the relation between drinking and working. The current emphasis is on the workplace as a case-finding institution. However, the sociology of alcohol and occupation deserves attention. Unanswered questions include the contributions of the occupations themselves, the predispositions of people in those occupations, the availability of inexpensive alcohol in certain occupational environments, and the demographics of employees in the high-risk occupations. In this context, the committee recommended the following:

- conduct research on alcohol as a factor in industrial accidents and in unsound decision processes by professionals in the workplace
- study systematically occupation-related exposure to chemicals that interact with alcohol and other psychoactive drugs.

Among the broader societal issues, the committee considered the many casualties that involve alcohol. Recommended are prevention-oriented analyses of the role of alcohol in the sequence of events leading to a casualty, population surveys on the relationship between drinking and accidents, emergency room and other epidemiological studies of alcohol involvement in injuries, and case studies that control for environmental factors in alcohol-related accidents. In case-control studies, research designs might best seek an explanation for how alcohol and the circumstances of the casualty are related.

The impact of drunkenness and drinking history on trauma survival and recovery also requires further study to provide guidelines to health care systems and professionals. With regard to both individual and societal issues related to the consequences of drinking, the committee made the following recommendations:

- augment studies of the family process and alcoholism with studies exploring the role of drinking and the resulting changes in a broad cross-section of American families
- examine further the effects of alcohol on sexual functioning and reproduction, particularly in women
- focus on alcohol issues related to rape and teenage pregnancy
- examine the possibility that alcohol may play a role in the transmission of HIV and the development of AIDS by facilitating risky behavior and/or by interfering with normal immune responses
- explore systematically the alcohol-and-crime connection, including consideration of recent research that suggests that cultural, rather than pharmacological, factors link drunkenness with violence and crime
- investigate alcohol use as an explanation (i.e., an excuse) for domestic violence
- evaluate the interaction of new drinking-and-driving regulations with the criminal justice and treatment systems
- reexamine drinking-and-driving behavior with respect to the role of alcohol in multiple-cause sequences
- examine drinking-and-driving behavior with reference to risk taking among young men
- reexamine the relationship between drinking and homelessness with reference to the rapidly changing homeless population of the 1980s
- collect survey data on alcohol and drug use, specifically about quantity consumed per drinking occasion
- study the consequences of combined (simultaneous or consecutive) use of alcohol with tobacco, sedatives, marijuana, cocaine, caffeine, and other drugs, including over-the-counter and prescription drugs
- investigate the effects on drinking of such factors as fatigue, social context, the "street" lore, and mutual enhancement (as in smoking and drinking)
- collect more epidemiological data on both clinical and general populations for such topics as the events leading to emergency room episodes involving alcohol and other drug use and combined drug use and its consequences in high-usage groups. ■

–THE EDITORS

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